

行政院國家科學委員會專題研究計劃成果報告

資本投資與股票報酬率之間的長期關係

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1. 前言

資本支出係指企業中經濟效益長達一個會計期間以上的支出，在追求企業價值極大化的原則下，資本支出的決策準則理應使企業價值提升，增進股東財富，也就是說資本支出應與公司股價呈正比；本文主旨即在探討台灣上市公司資本支出與股票報酬率之間的長期關係，以瞭解企業長期投資決策之執行成效，進而協助投資人尋求最佳投資標的與時點。

在文獻中，相關議題的探討多以事件研究法(event study)為之，但本質上資本支出對股票報酬率的影響為一長期性質，且事件研究法中所採用的單因子市場模型(market model)又為 Fama and French (1993)所質疑，本研究則試圖解決事件研究法的缺失，偏重於探討資本支出變動後對報酬率產生的長期影響，分別利用 Fama and French (1992)所提出的特徵模型(characteristic-based model)以及 Fama and French (1993)所提出的因子模型(factor-based model)為之，前者認為：就橫斷面(cross-sectional)而言，不同公司的股票報酬率與個別公司的特徵值有關，而與系統風險無關，在實證中兩個經常被提及的特徵值分別為公司市值(firm size)與淨值市價比(book-to-market equity)，如 Banz (1981)、Fama and French (1992)…等學者均發現股票報酬率與公司市值(每股股價乘以流通在外股數)之間有顯著負向關係，該現象即稱為規模效應(size effect)；另一方面，Stattman (1980)、Rosenberg, Reid, and Lanstein (1985)、Fama and French (1992) …等學者則發現股票報酬率與淨值市價比之間有顯著正向關係，該現象即稱為淨值市價比效應(book-to-market effect)；本研究中將首先利用市值與淨值市價比兩指標建立特徵模型，同時視股票報酬率為資本支出的函數，以從中找出資本支出與股票報酬率之間的關係。

因子模型認為就時間序列而言，不同公司的股票報酬率是由共同因子(common factor)所決定，任一股票報酬率不僅受到市場因子影響，同時也受到市值與淨值市價比兩因子影響，如我們將此三因子同時考慮即可從中找出資本支出與股票報酬率之間的關係。

如前言，在追求企業目標之下，資本支出理應與股票報酬率呈正向關係，但實務上卻可能受到公司屬性干擾而影響到企業長期投資決策的成效，這些屬性包含有企業未來的產出趨勢、投資機會品質、產業別或籌措資金能力…等。Malkiel, von Furstenberg, and Watson (1979)與 Chappell and Cheng (1982)研究企業投資行為而發現：產出趨勢的變動值與 Tobin's q 的變動值對企業投資有正向影響。Shieh (1995)與 Chung, Wright

and Charoenwong (1998)並且發現 Tobin's q 會影響到資本支出之變動宣告對股票報酬率的影響，對 high- q 公司而言，資本支出之變動宣告與股價之間有正向關係，反之，對 low- q 公司而言，資本支出之變動宣告則與股價之間有負向關係。McConnell and Muscarella (1985)針對一般產業與公共事業進行資本支出之事件研究，結果發現：資本支出之變動宣告只對一般產業之股價有正向影響，對公共事業則無顯著影響。Titman, Wei and Xie (1999)利用特徵模型與因子模型進行資本支出之長期研究，結果發現：低負債比率且高現金流量公司的資本支出變動與股票報酬率之間有相對顯著的負向關係，顯示其資金籌措相對容易，反而出現過度投資現象，公司價值下跌。

若市場訊息對稱，且所有投資人預期正確，則當資本支出變動宣告後，股價應可立即反映資本支出變動的所有資訊，但實際上市場訊息並非對稱，而且投資人對公司的預期往往會隨著長期投資決策的執行成效而不斷調整，則探討資本支出變動在長期間各屬性對股票報酬率的影響確實有其必要性，除了可協助企業找出長期投資決策的成功屬性，以助企業達成價值極大化之目標外，更可掌握企業長期投資決策之作用(發酵)時間，以提供投資人作為股市長期投資之參考依據。

2. 文獻

企業乃透過資金運用而創造價值的機構，所以其資金投資是否可提升企業價值便成為公司理財與股東投資的一項重要課題，亦是研究者所關心的一項重要議題。

Malkiel, von Furstenberg, and Watson (1979)透過理論模型推導出廠商之投資行為方程式，他們認為：產出趨勢之變動(change in the ratio of output relative to its trend value)反應了公司未來預期產出相對於趨勢值的變動情形；而 Tobin's q 的變動則反應了市場對於公司未來利潤變動的預期，且兩者對於公司投資均有正向的影響，他們並利用產業資料進行實證以佐證其推論。Chappell and Cheng (1982)延續前述學者之研究，在實證上作了更嚴謹的推論，同時針對個別公司與產業進行實證，而得到了不同於 Malkiel, von Furstenberg, and Watson 的結果，他們發現：實證分析時，整合的程度愈小(指迴歸式中考慮之公司家數愈少)，產出趨勢變動對投資的影響愈大，而非 Tobin's q 。雖然實證結果不盡相同，但以上兩篇研究均支持產出趨勢之變動與 Tobin's q 的變動對公司投資有正向影響。

Tobin's q 既然可反應市場對於公司未來利潤的預期，並對公司投資產生影響，則其應可進一步影響公司價值。Shieh (1995)利用事件研究法計算資本支出變動宣告所產生之異常報酬，並進一步探討該異常報酬

與 Tobin's q 之間的關係，結果發現：兩者之間有強烈且顯著的正向關係，high- q 公司資本支出之變動宣告與其異常報酬率之間有顯著正向關係；low- q 公司資本支出之變動宣告與其異常報酬率之間的關係則不顯著為負。Chung, Wright and Charoenwong (1998)同樣採用事件研究方法，探討資本支出變動宣告對不同 Tobin's q 之公司股價的影響，結果發現：若投資機會相對具有價值(high- q firms)，則資本支出之變動宣告對股價有正向影響；反之，若投資機會不具價值(low- q firms)，則資本支出之變動宣告對股價有負向影響；基本上，此一研究發現與 Shieh 是頗為一致的。

在文獻上，除了產出趨勢之變動與 Tobin's q 的變動可能影響資本支出與股票報酬率之間的關係外，產業別亦可能為影響因素之一。McConnell and Muscarella (1985)採用 event-time study 探討資本支出變動宣告對美國一般產業與公共事業兩大產業股票報酬的影響，以瞭解事件日之平均報酬是否顯著異於事件日前後 60 日(扣除前後 10 日)的平均報酬，結果發現：對一般產業而言，資本支出變動之宣告對於股價有正向影響，但對於公共事業則無顯著影響。

相較於前述研究著重於利用事件研究法，探討資本支出變動宣告對股價的立即性影響；Titman, Wei and Xie (1999)則是分別採用特徵模型與因子模型，探討資本支出實際改變對美國一般股價產生的影響。實證結果發現：資本支出增加愈多，對其日後股票報酬有愈不利之影響，且其影響至少長達 5 年，此一結果顯然與多數事件研究法所得推論相反。針對該負向關係，作者嘗試由資金受限或是過度投資的角度來解釋，實證結果發現：資本支出變動與股票報酬率之間的負向關係在過度投資公司(低負債比率且高現金流量之公司)相對顯著，而在資金受限公司(高負債比率且低現金流量之公司)則相對不顯著。

歸納前述諸多學者的研究，公司投資支出變動對股價的影響可能與以下四點公司屬性有關：產出趨勢之變動、Tobin's q 、產業別、資金受限或是過度投資，而且也可能與研究方法(包含資產實證模型與研究期間長短之差異)有關；因此，本研究首先將引用 Titman et al.的建議，分別採用特徵模型與因子模型，探討國內上市公司資本支出變動與其後續 5 年股票報酬率之間的關係，以瞭解資本支出變動之效果是否有遞延或持續反應的現象，並利用以下 4 點屬性作分類研究。

I. 預期未來產出：

假設公司是依據銷售狀況決定產出，則預期未來產出增加，即預期未來銷售提高；在此情況下，配合投資支出的增加，應可使公司利潤提高，但若減少投資支出，將使公司失去競爭優勢，公司利潤反而減少；

反之，若預期未來銷售減少，而又提高投資支出，則可能使公司價值下降，但若適當減投資、降低成本，將有助公司度過困境。

II. 預期未來利潤(投資機會品質)：

Tobin's q 反映了市場對公司未來利潤的預期，在預期未來利潤上漲的情況下，增加投資支出應可使公司價值提高；反之，若預期公司未來利潤減少，而又增加投資支出，應可使公司價值下降。事實上，Tobin's q 即反映了公司的投資機會品質。

III. 產業別：

若該產業屬於未來趨勢產業，則資本支出之增加應可帶來未來現金流入之增加，公司價值提升；反之，若該產業屬於夕陽產業，則資本支出之增加無法帶來現金流量之增益，公司價值向下修正。

IV. 資金受限(financial constraint)或過度投資(over-investment)：

Titman, Wei and Xie (1999)指出：當公司具有低現金流量，且高負債比率時，可能因為管理者的短視或是代理問題，而使得資本支出的增加反而降低公司價值。或者是當公司具有高現金流量，且低負債比率時，可能出現過度投資的現象，此時增加之投資支出反而對公司價值有不利影響。

所以，本研究將分別利用以上各公司屬性將所有股票加以分類，再探討各分類股票之資本支出變動與其股票報酬率之間的長期關係，以找出影響資本支出變動與股價之間關係的主要原因。

3. 研究方法與資料處理

3.1 資本支出

本研究的主要目的是為了探討資本支出變動對該公司價值的影響，有關資本支出的定義如下。資本支出係指經濟效益長達一個會計期間以上的支出，其可能與公司銷售金額多寡或總資產規模大小有關，因此，我們根據 Titman, Wei and Xie (1999)的建議，首先將資本支出以銷售金額與總資產金額加以平減；再定義 t 年之資本支出變動等於同期資本支出相較於前 3 年平均資本支出的變動率，如下所示：

$$CI_t = \frac{CE_t - (CE_{t-1} + CE_{t-2} + CE_{t-3}) / 3}{(CE_{t-1} + CE_{t-2} + CE_{t-3}) / 3} \quad <3-1>$$

其中， CI_t 表示資本支出變動，稱資本投資(capital investment)； CE_t 表示以同期銷售金額或總資產平減過後

之標準化資本支出。

<3-1>所定義之資本投資是指資本支出的變動率，在資本支出變動劇烈的時候可能無法直接反映出資本支出之增減；例如某公司第 1, 2, 3, 4 年的標準化資本支出分別為-10, -10, -10, 10，則根據<3-1>定義，可得第 4 年資本投資為-2，代表第 4 年的資本支出相較於前 3 年平均水準反向變動 2 倍，但觀察該公司資本支出變化可發現實際上第 4 年的資本支出是增加的，為彌補該比率無法反映資本投資增減變動的缺憾，我們另行定義資本投資為資本支出之增減率，其定義如<3-2>式：

$$CI_t = \frac{CE_t - (CE_{t-1} + CE_{t-2} + CE_{t-3})/3}{|(CE_{t-1} + CE_{t-2} + CE_{t-3})/3|} \quad <3-2>$$

<3-1>與<3-2>式的差異僅在於分母是否為絕對值；經過絕對值處理後，可得前例中第 4 年資本投資為+2，正可反映出資本支出之增減變化。

有鑑於「AREMOS/UNIX 資料庫系統」中並無資本支出之相關資料，故須以其它變數代替，已知資本支出係指收益期間長達一個會計期間以上的支出，則可利用固定資產淨額兩年度的變動值加上折舊費用作為資本支出的代理。

為探討資本支出變動與股票報酬率之間的關係，最簡單的方法是直接將不同公司的資本支出變動與其對應股票報酬率進行橫斷面迴歸；然而，此一作法卻缺乏理論依據，因為資本支出變動並非影響橫斷面股票報酬率變動的唯一因素，因此本研究計劃分別採用特徵模型與因子模型，輔助我們解釋資本支出變動與股票報酬率之間的關係。

3.2 特徵模型

Fama and French (1992)提出特徵模型，他們認為貝它值(beta)並無法有效解釋橫斷面股票報酬率的變動，真正可以解釋橫斷面股票報酬率的是公司特徵值，特別是公司規模(SZ)與淨值市價比(BM)，其模型如下：

$$R_{i,t} - R_{f,t} = \alpha_{0,t} + \alpha_{1,t} \cdot SZ_{i,t} + \alpha_{2,t} \cdot BM_{i,t} + u_t \quad <3-3>$$

其中， $R_{i,t}$ 表示個股 i 在 t 期之報酬率； $R_{f,t}$ 表示 t 期之無風險利率(risk-free rate)； $SZ_{i,t}$ 與 $BM_{i,t}$ 分別表示個股 i 市值與淨值市價比的自然對數； $t = 1, 2, \dots, T$ 。<3-3>式即表達了 t 期所有個別股票報酬率與其對應特徵值之間的關係，實證上，我們必須以<3-3>式逐期作橫斷面迴歸，再研判實證期間逐期求得之 T 組迴歸係數

$\alpha_{1,t}$ 、 $\alpha_{2,t}$ 是否顯著，以瞭解股票報酬率與公司特徵值之間是否有顯著關係。然而，<3-3>式引起頗多爭議的是有估計誤差(estimation errors)，為降低估計誤差，<3-3>式必須改以投資組合討論；且實證模型中還會加入貝它值作為解釋變數，以考驗貝它值是否可解釋橫斷面的股票報酬率。一般被奉為圭臬的作法是於每年 6 月底形成投資組合，以同年度 6 月底之 SZ 以及前一年度 12 月底之 BM 為指標，形成若干組 SZ-BM 投資組合，即所謂之指標投資組合(benchmark portfolios)，其中 SZ 是以同年度 6 月底股價乘以流通在外股數求得，至於 BM 則是以前一年度年底的帳面價值除以前一年度年底的市值求得；接下來，可以市值為權數計算各組指標投資組合 p 的加權平均貝它值(β_p)、加權平均規模(SZ_p)與淨值市價比(BM_p)，並由同年度 7 月起開始逐月計算各組指標投資組合 p 之加權平均風險溢價($R_p - R_f$)至下一年度 6 月底為止；其中，考慮到證券非連續交易(non-synchronous trading)的問題，我們根據 Scholes and Williams (1977)的建議計算 Scholes-Williams 貝它值¹。

接下來，即可將逐月求得之投資組合風險溢價以<3-4>式進行橫斷面迴歸：

$$R_{p,t} - R_{f,t} = \alpha_{0,t} + \alpha_{1,t} \cdot \beta_{p,t} + \alpha_{2,t} \cdot SZ_{p,t} + \alpha_{3,t} \cdot BM_{p,t} + u_t \quad <3-4>$$

，則每年可得到 12 組迴歸係數 α_0 、 α_1 、 α_2 與 α_3 ，逐年重覆相同步驟後，即可得到 T 組迴歸係數(T 等於

¹ 個別股票 i 在每年度 6 月底的貝它值可計算如下：

$$\beta_{i,t}^{sw} = \frac{\beta_{i,t}^- + \beta_{i,t} + \beta_{i,t}^+}{1 + 2\rho_{M,t}}$$

$$\beta_{i,t}^- = \frac{\text{cov}(R_{i,t-s}, R_{M,t-s-1})}{\text{var}(R_{M,t-s-1})}, \quad s=0,1,2,\dots,47 \text{ 月}$$

$$\beta_{i,t} = \frac{\text{cov}(R_{i,t-s}, R_{M,t-s})}{\text{var}(R_{M,t-s})}, \quad s=0,1,2,\dots,47 \text{ 月}$$

$$\beta_{i,t}^+ = \frac{\text{cov}(R_{i,t-s}, R_{M,t-s+1})}{\text{var}(R_{M,t-s+1})}, \quad s=0,1,2,\dots,47 \text{ 月}$$

$$\rho_{M,t} = \frac{\text{cov}(R_{M,t-s}, R_{M,t-s-1})}{\text{std}(R_{M,t-s})\text{std}(R_{M,t-s-1})}$$

其中，cov 表示共變異數(covariance)，var 表示變異數(variance)，std 表示標準差(standard deviation)， R_M 表示市場投資組合(market portfolio)報酬率；每筆貝它值是以以前 48 個月的月報酬率所估計出，且為避免新上市股票資料不足，並限制估計過程中至少必須有 18 筆觀察值。

實證年限乘以 12 個月)。爲了瞭解資本支出變動對股票報酬率之影響，可嘗試將<3-4>式加入投資組合之資本投資項 $CI_{p,t}$ ，如<3-5>式：

$$R_{p,t} - R_{f,t} = \alpha_{0,t} + \alpha_{1,t} \cdot \beta_{p,t} + \alpha_{2,t} \cdot SZ_{p,t} + \alpha_{3,t} \cdot BM_{p,t} + \alpha_{4,t} \cdot CI_{p,t} + u_t \quad <3-5>$$

透過<3-5>式可瞭解：未被 SZ 及 BM 所解釋完全的股票報酬率，與資本支出變動之間是否有特定關係，而其方法爲檢驗 T 個 α_4 是否顯著。

另外，受限於台灣股市規模較小，本研究中只分別以 SZ 與 BM 均分出 3 組投資組合，則 3 組 SZ 投資組合與 3 組 BM 投資組合的集合可形成 9 組指標投資組合；以 9 組投資組合進行迴歸明顯有自由度不足、估計無效之虞；因此，我們同時也以個股進行橫斷面迴歸，惟迴歸式中的貝它值並非指個股貝它值，而是個股所落入指標投資組合的貝它值，該作法可歸避貝它值的估計誤差，而爲一般資產實證模型相關研究所廣爲採用，例如：Fama and French (1992)、Chui and Wei (1998)。

除了以橫斷面迴歸模型找出股票報酬率與資本支出變動之間的關係外，第 2 種作法是將每一個股報酬率減去其所落入之指標投資組合的平均報酬率，稱之爲指標調整後報酬率(benchmark-adjusted return)，僅以 $AR_{i,t}$ 表示：

$$AR_{i,t} = R_{i,t} - R_{p,t}^{B_i}$$

其中， $R_{p,t}^{B_i}$ 表示個股 i 所落入之指標投資組合的平均報酬率。接下來，便可以(t-1)年之資本投資爲指標，自 t 年 6 月底起由低至高均分出 5 組 CI 投資組合，並可計算各組 CI 投資組合自 t 年 7 月起至(t+1)年 6 月底止每月之平均調整後報酬率；逐年重覆相同步驟，再求算實證期間 5 組 CI 投資組合之平均調整後報酬率。觀察所有 CI 投資組合與其平均調整後報酬率之間的關係，可由其間特定關係，了解資本支出變動與股票報酬率之間的關係。

此外，針對資本支出作用期間是否有遞延或持續的現象，我們可以試著重覆前述步驟，於 t 年 6 月底以(t-1)年之資本投資爲指標，由低至高形成 5 組 CI 投資組合，並計算各組 CI 投資組合自(t+1)年 7 月起至(t+2)年 6 月底之平均調整後報酬率，亦即 CI 投資組合形成後第 2 年之報酬率，以此類推，第 3、第 4、第 5 年之調整後報酬率均可從而計算出，以供我們瞭解資本支出改變後，往後 5 年股票報酬率之變動情形。

3.3 因子模型

Fama and French (1993)提出因子模型，他們認為股票報酬率不僅受到市場因子(market factor)的影響，同時亦受到另外 2 個因子所影響，這兩個因子分別是規模因子(SZ factor)與淨值市價比因子(BM factor)，則投資組合報酬率之時間序列模型可表示如下：

$$R_{p,t} - R_{f,t} = \beta_{0,p} + \beta_{1,p} \cdot (R_{M,t} - R_{f,t}) + \beta_{2,p} \cdot R_{HML,t} + \beta_{3,p} \cdot R_{SMB,t} + v_{p,t} \quad <3-6>$$

其中， $R_{p,t}$ 表示 t 期投資組合之平均報酬率； $R_{M,t}$ 表示 t 期之市場投資組合報酬率，將市場投資組合報酬率減去無風險利率 R_f ，即為市場因子之風險溢價；至於 R_{SMB} 與 R_{HML} 則分別為規模因子與淨值市價比因子的風險溢價，其計算如下：在每年 6 月底，將所有股票依同年 6 月底 SZ 劃分為小(S)、大(B)兩組，並依前一年 12 月底 BM 將所有股票劃分為高(H)、中(M)、低(L)三組，共可形成 S/H、S/M、S/L、B/H、B/M、B/L 六組因子投資組合(factor portfolios)；則可將 S/H、S/M、S/L 三組投資組合的平均報酬率減去 B/H、B/M、B/L 三組投資組合的平均報酬率，即可得小 SZ 投資組合與大 SZ 投資組合兩者之間的報酬率差值，此即規模因子的風險溢價(R_{SMB})；另外，將 S/H、B/H 兩組投資組合的平均報酬率減去 S/L、B/L 兩組投資組合的平均報酬率，即可得高 BM 投資組合與低 BM 投資組合兩者之間的報酬率差值，此即淨值市價比因子的風險溢價(R_{HML})。

<3-6>式的模型便可應用於 CI 投資組合。首先，於每年 6 月底將所有股票依前一年度 CI，由小至大劃分為 5 組 CI 投資組合，並且計算各組 CI 投資組合自同年 7 月起至下一年度 6 月底為止的每月平均報酬率，則可得到 5 組 CI 投資組合在整段實證期間的報酬率時間序列；接下來，便可以<3-6>式進行時間序列迴歸，求得各組 CI 投資組合之迴歸係數 β_0 、 β_1 、 β_2 與 β_3 ；其中， β_0 即代表 CI 投資組合報酬率中未被 3 因子所解釋完全的部份，而由其數值大小與 CI 投資組合之間的關係，同樣可瞭解資本支出變動與股票報酬率之間的關係。

同理，為瞭解資本支出作用期間是否有遞延或持續的現象，我們可以試著重覆前述步驟，於 t 年 6 月底將所有股票依(t-1)年年底 CI，由小至大劃分為 5 組 CI 投資組合，並且計算各組 CI 投資組合自(t+1)年 7 月起至(t+2)年 6 月底為止的每月平均報酬率，亦即 CI 投資組形成後第 2 年之平均報酬率；接下來，逐年重覆相同步驟，便可求得各組 CI 投資組合形成後的所有第 2 年的平均報酬率集合；下一步驟，同樣採<3-6>式進行時間序列迴歸，即可求得各組 CI 投資組合之迴歸係數 β_0 、 β_1 、 β_2 與 β_3 ；惟此時所指 β_0 ，係指 CI 投資組合第 2 年報酬率中未被 3 因子所解釋完全的部份；以此類推，第 3、第 4、第 5 年之 β_0 均可從而計算出，

以供我們瞭解資本支出改變後，往後 5 年股票報酬率之變動情形。

另外有一個作法是假設特徵模型與因子模型同時成立，此法即為 Titman, Wei and Xie (1999)所採用：將報酬率中與 SZ、BM 兩特徵值有關的部份去除掉，接下來，再以因子模型進行時間序列迴歸。其具體作法如下：一如特徵模型的步驟，首先，先形成 9 組指標投資組合，並計算每一個股之指標調整後報酬率(AR)，該步驟即為扣除掉報酬率中與 SZ、BM 兩特徵值有關的部份；下一步驟，形成 5 組 CI 投資組合，並計算各組 CI 投資組合之平均調整後報酬率；接下來，直接將 CI 投資組合之調整後報酬率代入<3-6>式等號的左邊進行時間序列迴歸，並且觀察 β_0 與 CI 投資組合之間的關係即可。惟此時所指之 CI 投資組合之平均調整後報酬率已經過調整，因此毋須再減去無風險利率，其模型如下：

$$AR_{p,t} = \beta_{0,p} + \beta_{1,p} \cdot (R_{M,t} - R_{f,t}) + \beta_{2,p} \cdot R_{HML,t} + \beta_{3,p} \cdot R_{SMB,t} + v_{p,t} \quad <3-7>$$

其中， $AR_{p,t}$ 代表 CI 投資組合 p 在 t 期的平均指標調整後報酬率。

同理，利用<3-7>式，我們同樣可觀察資本支出作用期間是否有遞延或持續的現象，其實證方法均同，惟 CI 投資組合之平均調整後報酬率分別改採投資組合形成後第 2 年、第 3 年…資料代入，其細節不再贅述。

3.4 公司屬性

考慮到資本支出變動與股價之間的關係可能與預期未來產出、預期未來利潤(投資機會品質)、產業別、資金籌措能力等四個公司屬性有關；因此，執行特徵模型與因子模型之實證時，又可分別將股票依預期未來產出增加與減少分為兩大類、或依投資機會品質分為具有價值與不具價值兩類型、或依產業別分為新興產業與非新興產業兩大類、或依負債比率與現金流量分為低負債比率且高現金流量、低負債比率且低現金流量、高負債比率且高現金流量、高負債比率且低現金流量 4 大類；分別探討各類股票之資本支出變動與其股票報酬率之間的關係，期望可以透過此一較為繁複的實證結果，提供企業決策者乃至一般投資人重要訊息。有關公司屬性的定義如下：

a. 預期未來產出水準：

根據 Malkiel, von Furstenberg, and Watson 以及 Chappell and Cheng 等學者的作法，他們是以產出相對於趨勢值的變動 $\Delta(Q/Q^m)$ 來反映預期未來產出的變動情形，而且公司往往是以前一年度的 $\Delta(Q/Q^m)$ 來決定今年度的投資決策，因此實證上，我們設定以 t 年 6 月底為基準點，採用(t-2)年底的 $\Delta(Q/Q^m)$ 來分類所有

股票：當 $\Delta(Q/Q^m)_{t-2} > 0$ 時，表示預期未來產出增加，則公司於(t-1)期增加投資；反之，當 $\Delta(Q/Q^m)_{t-2} < 0$ 時，表示預期未來產出減少，則公司於(t-1)期減少投資。

實證資料的處理上是以損益表中之營業收入淨額代替產出(Q)，並將產出值對常數項與時間項作迴歸，取得產出預期值，即趨勢值(Q^m)；再將各期產出除以其對應之趨勢值，即可得各期產出相對於趨勢值的比率 Q/Q^m 。

b. 依預期未來利潤分類：

根據不同學者的作法，本計劃將分別採用 Tobin's q 或其變動量，來反映公司未來的利潤。首先，依循 Lang et al. (1989), Jung et al. (1996), Chung, Wright, and Charoenwong 等學者的作法，可直接利用 Tobin's q 來反映投資機會品質；投資機會相對具有價值，則 Tobin's q 大於 1，投資機會相對不具有價值，則 Tobin's q 小於 1。此外，根據 Malkiel, von Furstenberg, and Watson、Chappell and Cheng 等學者的作法，可根據 Tobin's q 相對於其長期均衡值(\bar{q})的變動情形來反映公司未來利潤的變動情形；當 Tobin's q 提高時(i.e. $\Delta(q/\bar{q}) > 0$)，預期公司未來利潤提高，將促使公司增加投資，當 Tobin's q 降低時(i.e. $\Delta(q/\bar{q}) < 0$)，預期公司未來利潤減少，將促使公司減少投資。而且，引用謝劍平的研究方法，我們計算 Tobin's q 如下：

$$q = \frac{D_B + PS_B + E_M}{D_B + PS_B + E_B} = \frac{D_B + PS_B + E_M}{TA}$$

其中， D_B 、 PS_B 、 E_B 分別表示負債、特別股與普通股之帳面價值，其總和即資產總額(此處採用特別股股本作為特別股帳面價值)； E_M 表示普通股之市場價值，即 SZ。

此外，無論是根據 Malkiel, von Furstenberg, and Watson、Chappell and Cheng 或是 Titman, Wei and Xie 等學者的看法，公司往往是以(t-2)年的投資機會品質衡量(t-1)年的資本預算決策；故實證上，我們設定以 t 年 6 月底為基準點，採用(t-2)年底的 Tobin's q 來分類所有股票。

c. 依產業別分類：

考慮到形成投資組合之需，我們無法將產業別作過細的分類，僅以新興產業與非新興產業兩類作劃分。

- i. 新興產業—以經濟部工業局所設定之十大新興產業為代表，包含有 1.通訊工業、2.資訊工業、3.消費性電子工業、4.半導體工業、5.精密機械與自動化工業、6.航太工業、7.高級材料工業、8.特用化學品與製

藥工業、9.醫療保健工業、10.污染防治工業等十大產業。

ii. 非新興產業—工業局所設定之十大新興產業以外之產業。

依台灣上市公司分類，我們選擇電機、電器電纜、化學、電子等四大行業作為新興產業，其餘則為非新興產業，包含水泥、食品、塑膠…等。

d. 依融資難易度分類：

依據負債比率(D/TA)與現金流量(CF)兩指標分別將所有股票兩兩等分為四部分，其中，低 D/TA 且高 CF 的股票即融資相對容易的過度投資股，而高 D/TA 且低 CF 的股票即融資相對不易的資金受限股。

有關負債比率與現金流量之定義如下：將每年 12 月底之負債總額除以同期之資產總額，可求得各期之負債比率，但考慮到負債比率可能因產業而異，因此必須將各公司負債比率除以產業平均值，以求得標準化負債比率；另外，將損益表中之稅後淨利加上折舊費用，可求得各公司各期之現金流量，但考慮到現金流量可能與企業的銷售金額或資產總額有關，因此將現金流量以銷售金額或資產總額加以平減，以求得標準化現金流量。

3.5 資料來源與實證期間

本研究之資料來源為教育部電算中心「AREMOS/UNIX 資料庫系統」，受限於 AREMOS 財務報表資料庫內建資料開始於 1982 年，本研究實證期間自民國 1987 年 7 月 1 日²起至 2000 年 6 月底止。

4. 實證結果

4.1 全體股票

4.1.1 指標投資組合

² 實證期間開始於 1987 年 7 月 1 日是因為特徵或因子模型的實證研究方法必須開始於 t 年 6 月底(即 t 年 7 月 1 日)，而且資本投資的資料取得必須溯及 4 年的資本支出，例如 1986 年的資本投資必須由 1986, 1985, 1984, 1983 的資本支出求得；另外，AREMOS 資料庫中並沒有資本支出資料，每一年度的資本支出必須藉由當年度及前一年度的固定資產淨額求得，例如 1983 年的資本支出必須利用 1983 與 1982 年兩年度固定資產淨額的變動額求得。因此，固定資產淨額資料開始於 1982 年，資本支出資料開始於 1983 年，資本投資資料開始於 1986 年，則由 1987 年 7 月 1 日起可以逐年以其前一年度的資本投資形成 5 組 CI 投資組合。

本研究利用市值與淨值市價比兩指標建構特徵模型，並依特徵模型之研究方法於每年 6 月底形成投資組合，將所有股票分別以市值與淨值市價比均分為 3 組投資組合，則 3 組市值投資組合與 3 組淨值市價比投資組合的集合共可形成 9 組 SZ-BM 投資組合。由於所有股票是各自以 SZ 與 BM 均為 3 等分，我們並不預期其集合(SZ-BM 投資組合)中的股票個數相同，而且隨著台灣資本市場之日益擴展，每年 6 月底列入考量之股票個數不斷增加，指標投資組合中的股票個數亦逐年提高，我們將 1987 年 6 月底至 1999 年 6 月底間各組指標投資組合中的平均股數列示於表 1(a)部份，平均而言，9 組指標投資組合中的股票個數介於 16~25 家；其中，資產股(value firm)與成長股(growth firm)³相對較多，而同時為小規模且低淨值市價比或大規模且高淨值市價比的股票則較少。

每年 6 月底形成 9 組指標投資組合後，可以當時市值為權數，計算各組指標投資組合的市值加權平均 Scholes-Williams 貝它值，則由 1987 年 6 月底至 1999 年 6 月底為止，每組指標投資組合均可得到 13 筆加權平均貝它值，計算其時間序列平均值如表 1(b)部份：由於各組指標投資組合的加權平均貝它值變動大，使其時間序列平均值均小於 1；此外，各組指標投資組合的貝它值之間並無關聯，貝它值並不隨 SZ 或是 BM 變動而有一致的變動方向。

每年 6 月底亦可以市值為權數計算出各組指標投資組合的加權平均市值、淨值市價比與資本投資，其時間序列平均值請見表 1(c)~(h)部份。首先，透過表 1(c)與(d)的結果可初步驗證實證結果正確：表 1(c)中任一給定淨值市價比水準下，市值由上至下愈來愈大；表 1(d)中任一給定市值水準下，淨值市價比由左至右愈來愈高；另外還可發現：同為前 3 分之一的高市值公司，最高市值公司又集中於最低淨值市價比集合，意謂台灣地區最大規模公司的股價大幅高於其帳面價值。表 1(e)~(h)則摘錄不同定義下各組指標投資組合的資本投資，結果發現：無論資本投資的定義為何，資本投資與市值或淨值市價比之間均無一致關係，隱含資本支出與公司規模或淨值市價比率無關，但是觀察資產股與成長股的平均資本投資又可發現，成長股的資本投資總是高於資產股。

最後，每年 6 月底形成指標投資組合後，我們可以當時市值為權數計算各組指標投資組合自同年 7 月起至下一年度 6 月止每月的加權平均風險溢價，逐年重覆相同步驟後，各組指標投資組合可得到自 1987 年 7 月起至 2000 年 6 月止共計 156 筆每月風險溢價，其平均值與標準差列示於表 1(i)與(j)。由表 1(i)可發現：

³ 資產股係指小規模且高淨值市價比的公司，而成長股則是指大規模且低淨值市價比的公司。

在任一給定淨值市價比水準下，規模愈大的投資組合，其風險溢價愈低，隱含股票報酬率與公司規模之間有負向關係；但對照表 1(i)部份又可發現：各組指標投資組合的風險溢價波動大，則股票報酬率與公司規模之間的負向關係可能並不顯著，至於股票報酬率與淨值市價比之間則無顯著的一致關係；另外，值得一提的是，資產股的平均風險溢價 1.9835% 高於成長股平均風險溢價 1.1928%，此一結果與其它研究者所發現的『資產股優於成長股』的現象頗為一致，如 La Porta, Lakonishok, Shleifer, and Vishny (1997)，惟結果仍不顯著。

4.1.2 特徵模型

每年 6 月底形成 9 組指標投資組合，並計算出各組指標投資組合 6 月底的加權平均市值、前一年度 12 月底的淨值市價比與資本投資，以及同年度 7 月起至下一年度 6 月為止每月的加權平均風險溢價後，接下來即可逐月以<3-5>式進行投資組合或個股的橫斷面迴歸，<3-5>式中有 4 個解釋變數，為求完整，我們將被解釋變數分別對單個或兩個或三個或四個解釋變數進行迴歸，共計有 39 個迴歸模型，則自 1987 年 7 月起至 2000 年 6 月止整段實證期間內，每個模型的解釋變數均可得到 $12 \times 13 = 156$ 筆迴歸係數，可以 t 檢定考驗各迴歸係數是否顯著，各係數的時間序列平均值與 t 統計量請見表 2。

首先，觀察表 2(A)投資組合之橫斷面迴歸結果，可發現：除了少部份模型的截矩項為顯著外，絕大部份的迴歸係數均不顯著；其中，所有貝它係數均不顯著且多數情況下為負，表示系統風險無法有效解釋橫斷面的股票報酬率，資本資產訂價模型(CAPM)不獲支持；其次，無論橫斷面迴歸模型為何，所有市值的迴歸係數與大部份淨值市價比的迴歸係數均不顯著為負，此一結果與 Chui and Wei (1998) 1981 年 7 月至 1993 年 6 月在台灣股市的實證結果雷同；最後，無論資本投資之定義為何，多數資本投資的迴歸係數均不顯著為負，隱含高資本投資的公司並未因高額度的資本支出而得到企業價值的提升。

表 2(B)為个股之橫斷面迴歸結果，可發現：所有貝它值的迴歸係數均顯著或不顯著為負，CAPM 仍然不成立；其次，所有市值與淨值市價比的迴歸係數依然不顯著為負；最後令人訝異的是，所有資本投資的迴歸係數均轉為不顯著的正值，雖然其符號頗為合理，但統計量仍不顯著，理論上資本支出與股票報酬率之間的正向關係仍不獲支持。

除了利用橫斷面迴歸解釋資本支出與股票報酬率之間的關係外，觀察 5 組 CI 投資組合的指標調整後報酬率亦有助於釐清兩者之間關係。每年 6 月底以前一年度資本投資形成 5 組 CI 投資組合後，即往前推算未

來一年各組 CI 投資組合的每月指標調整後報酬率，則由 1987 年 6 月底起至 1999 年 6 月底止，共可得到 1987 年 7 月起至 2000 年 6 月止 156 筆月報酬率，其平均值、標準差與正報酬率出現次數摘錄於表 3。由表 3 可發現：不論資本投資的定義為何，各組 CI 投資組合的指標調整後報酬率波動劇烈，使其平均值在 5% 顯著水準下均不顯著異於 0，而且 5 組 CI 投資組合的平均報酬率之間並無一致的變動模式；但是無論如何，在 156 筆月報酬率中，第 4 組與第 5 組(最高)CI 投資組合均非正報酬出現最多的投資組合，而且在 5 組 CI 投資組合中，第 5 組 CI 投資組合的平均調整後報酬率都是最低的，第 4 組 CI 投資組合則往往有最高的平均調整後報酬。相較於第 5 組 CI 投資組合有負的平均調整後報酬，第 1 組(最低)CI 投資組合反而有不顯著的正平均調整後報酬，此結果隱含資本投資最高的公司在資本支出後第 1 年反而有較低的調整後報酬，亦即致力於長期投資決策的公司短期內反而績效更差。

為進一步確認以上想法，我們嘗試建立兩個無本金投資組合(zero-investment portfolio)，該投資組合包含有低 CI 投資組合的長部位(long position)與高 CI 投資組合的短部位(short position)，稱資本投資差價(CI-spread)投資組合；若低 CI 投資組合優於高 CI 投資組合，則 CI-spread 投資組合的報酬率為正。第一個 CI-spread 投資組合賣相同金額的第 4 與第 5 組 CI 投資組合，並將所得平均投資在第 1 與第 2 組 CI 投資組合，則其報酬率序列即第 1 與第 2 組 CI 投資組合報酬率總和減去第 4 與第 5 組 CI 投資組合報酬率總和，再除以 2；第二個 CI-spread 投資組合是將賣第 5 組 CI 投資組合所得款項用以購買第 1 組 CI 投資組合，則其報酬率序列即第 1 組 CI 投資組合報酬率減去第 5 組 CI 投資組合報酬率。由實證結果可知：CI-spread 投資組合調整後報酬率的變動依然很大，其使平均值均不顯著異於 0；無論如何，二個 CI-spread 投資組合的平均調整後報酬率均為正，特別是第二個 CI-spread 投資組合的平均調整後報酬率高於第一個 CI-spread 投資組合 0.2% 以上，隱含低 CI 投資組合在第 1 年有高於高 CI 投資組合的異常報酬。

以上實證主要是討論資本支出變動後 1 年股票報酬率的變動情形，為了更進一步瞭解資本支出變動後的長期效果，我們同時也計算出 CI 與 CI-spread 投資組合形成後第 2, 3, 4 與 5 年的年報酬率，其結果整理於表 4 至 11。表 4 至 7 記錄了四種資本投資定義下，不同年度形成的 5 組 CI 投資組合未來 5 年年調整後報酬率的變化情形，可發現：在整段實證期間，沒有任何一組 CI 投資組合在任何一年度有絕對的優勢或劣勢，各組 CI 投資組合的調整後報酬率波動頗大，使其平均值多數不顯著異於 0 (表 4 至 7 中的最後一列)；觀察 5 組 CI 投資組合形成後第 1 年的年平均調整後報酬率可發現：第 5 組 CI 投資組合的報酬率最低，而第 4 組 CI 投資組合的報酬率則往往最高，此一結果與表 3 相同，其差異僅於前者是以年報酬表示，後者則為月報

酬表示；此外，第 5 組 CI 投資組合形成後第 1 年的負平均報酬在第 2 年後可獲改善，第 5 組 CI 投資組合不再總是最差投資組合，但亦非最佳投資組合；有趣的是，第 1 組 CI 投資組合形成後第 1 年的平均報酬率雖為正，但在第 2 年以後即轉為負值，特別是第 5 年的平均調整後報酬均在-6%以下，且通常為 5 組 CI 投資組合中表現最差者，此結果似乎隱含資本支出少的公司僅可獲取短期近利，長期以往，公司價值將隨資本支出的減少而不斷下降。此外，由 5 年累積報酬研判，第 4 組 CI 投資組合反而是比較受推薦的投資組合，因此我們依然無法斷言資本支出最高的公司長期會有較高報酬率。

表 8 至 11 記錄了四種資本投資定義下，不同年度形成的 2 個 CI-spread 投資組合未來 5 年年調整後報酬率的變化情形，可發現：兩個 CI-spread 投資組合形成後第 1 年的平均報酬均不顯著為正，而在第 2 年後即轉為不顯著的負值，此結果與表 4 至 7 所得結果一致，表示低 CI 投資組合的優勢只存在於形成後第 1 年，長期而言，高 CI 投資組合仍較低 CI 投資組合值得投資。

為了觀察不同年度形成的同一組 CI 或 CI-spread 投資組合在同一期間的報酬率是否相關，亦即瞭解時間是否是影響 CI 投資組合報酬率的主因，表 12 至 19 整理出不同年度形成的同一組 CI 與 CI-spread 投資組合在同一期間的每年調整後報酬率，並計算其平均值與 t 統計量於各表最後一列。實證結果發現：不同年度形成的同一組 CI 投資組合即使在同一期間內，其報酬率差異也很大，CI-spread 投資組合亦然，此一結果顯然異於 Titman, Wei and Xie (1999)在美國股市的發現⁴；因此，在台灣地區，時間並非影響 CI 投資組合報酬率的主因。

整體而言，應用特徵模型解釋資本支出與股票報酬率之間關係的結果並不顯著，這可能是因為特徵模型本身並不適用於台灣股市(橫斷面迴歸中各係數均不顯著)，也可能是因為資本支出與股票報酬率之間的關係會受到公司屬性影響，則不同屬性公司其資本支出與股票報酬率之間關係相互抵銷的結果，得到了全體股票的資本支出與股票報酬率之間無顯著關係。針對實證模型適用性的問題，接下來，我們將應用因子模型解釋資本支出與股票報酬率之間的關係。

4.1.3 因子模型

⁴ Titman, Wei and Xie (1999)針對 1973 年 7 月至 1996 年 6 月間的美國股市進行研究，研究結果中的表 3 顯示不同年度形成的 CI-spread 投資組合在同一期間的報酬率極為相近，例如，1984, 1983, 1982, 1981, 1980 年 6 月底形成的 CI-spread 投資組合在 1984 年 7 月至 1985 年 6 月期內間的報酬率分別為-3.95%, -4.02%, -4.29%, -4.34%, -4.38%。

應用因子模型解釋各組 CI 與 CI-spread 投資組合形成後第 1 年報酬率的結果摘錄於表 42。實證結果發現：因子模型對於各組 CI 投資組合具有很高的解釋能力，不但多數迴歸係數顯著，且調整後 R-square 均高於 80%，部份 CI 投資組合甚至高達 90%；但所有截距項在 5%顯著水準下均不顯著，亦即表示 3 因子解釋剩餘的報酬率不顯著異於 0；無論如何，可視該剩餘報酬為資本支出的函數，我們嘗試找出 5 組 CI 投資組合報酬率中未被 3 因子解釋完全的剩餘部份與資本支出之間的關係，結果發現：資本投資最少的第 1 組 CI 投資組合的剩餘報酬率雖不為正，但亦非最差投資組合；且無論資本投資的定義為何，第 5 組 CI 投資組合的剩餘報酬總是負且最低的，隱含資本支出最高的公司在短期內(第一年)反而股價下跌，此結果與特徵模型所得結果一致。另一方面，因子模型對於 CI-spread 投資組合報酬率的解釋能力則大幅下降，迴歸係數多數不為顯著，且調整後 R-square 均降至 30%以下；但其剩餘報酬率為正，隱含低 CI 投資組合優於高 CI 投資組合。

因子模型應用於各組 CI 與 CI-spread 投資組合形成後第 2、3、4 或 5 年報酬率的結果彙整於表 43~46，因子模型仍然適用於各組 CI 投資組合形成後第 2, 3, 4 或 5 年的報酬率，大部份調整後 R-square 高於 80%，且迴歸係數顯著。當資本投資定義為資本支出增減率的情況下，第 1 組 CI 投資組合形成後第 2 年的剩餘報酬率在 5%顯著水準下明顯為負，且為績效最差的投資組合，即使定義資本投資為資本支出變動率，該現象依然成立，惟不顯著，第 3, 4, 5 年亦然，顯示資本投資最少的公司，其企業價值將隨時間過往不斷下降。另一方面，第 5 組 CI 投資組合在形成後第 2 年的剩餘報酬轉為正值，第 3 年以後即使不為正值，亦不為最差投資組合；相較於其形成後第 1 年績效最差的表現，資本投資的效力似乎在第 2 年後才會慢慢顯現，但其績效仍非 5 組 CI 投資組合中最佳者。大多數情況下，第 4 組 CI 投資組合是表現最佳的投資組合，其剩餘報酬最高。另外，CI-spread 投資組合的剩餘報酬在第 2 年後全數轉為負值，進一步佐證低 CI 投資組合在第 2 年以後的表現不如高 CI 投資組合，就長期(2 年以上)而言，高 CI 投資組合是相對較合適的投資標的。

大體而言，特徵模型與因子模型所得結果一致：特徵(指標)調整後報酬或因子無法解釋完整的剩餘報酬均不顯著異於 0，且資本投資與股票報酬率之間無明確關係存在，因此我們無法斷言資本投資愈高股票報酬率愈高，或是資本投資愈少股票報酬率愈高。無論如何，最低 CI 投資組合在形成後第 1 年的績效並非最差，但在第 2 年以後則有惡化跡象；反之，最高 CI 投資組合在形成後第 1 年的績效雖為最差，但在第 2 年以後則有漸入佳境的傾向，可是仍然不為最佳投資組合；因此，即使在長期，我們依然無法斷言資本支出與股票報酬率之間有正向關係存在，僅能肯定高 CI 投資組合相對於低 CI 投資組合適合作為長期投資工具。

根據 Titman, Wei and Xie (1999)的作法，可進一步假設特徵模型與因子模型同時成立，而將指標調整後報酬率對三因子進行迴歸，各組 CI 與 CI-spread 投資組合形成後第 1, 2, 3, 4 與 5 年的迴歸結果摘錄於表 47~51，雖然模型解釋能力大幅下滑，大部份的迴歸係數均不顯著，且調整後 R-square 驟減，但所得結果與特徵或因子模型大致相同。

無論短期或長期，資本支出與股票報酬率之間在理論上應有的正向關係均不獲支持，這顯然與採用的實證模型無關⁵，則或許是受公司屬性影響；接下來，我們將所有股票依不同屬性加以分類，重覆前述所有實證步驟，以找出真正決定資本支出與股票報酬率之間關係的公司屬性。Titman, Wei and Xie (1999)建議將所有股票依不同屬性加以分為 2 大類後，再將每一大類中的股票重新分類出 5 組 CI 投資組合；不同於 Titman et al.的作法，我們建議所有股票的分類都是各自獨立的，亦即將所有股票依公司屬性、指標、或資本投資分別分類，此一作法的特色是可維持前一段研究中 9 組指標投資組合與 5 組 CI 投資組合的排序，並從中找 9 組指標投資組合或 5 組 CI 投資組合是否有偏向某種屬性的傾向，亦即可由此觀察出公司規模、淨值市價比、資本投資與公司屬性之間的關係。此外，資本投資的四個定義所得結果頗為一致，因此接下來我們只保留以總資產平減的資本支出增減率之實證結果，並且省略投資組合之橫斷面迴歸結果以及特徵與因子兩模型同時採用的實證結果。

4.2 預期未來產出水準

Malkiel, von Furstenberg, and Watson (1979)與 Chappell and Cheng (1982)認為產出趨勢的變動值對企業投資有正向影響。若資本支出與股票報酬率之間的關係是取決定預期未來產出水準，則依預期未來產出水準將所有股票分類後，應至少可發現以下幾點訊息：第一，預期未來產出水準增加群組的資本投資與其報酬率之間有正向關係存在，而預期未來產出水準減少群組的資本投資與其報酬率之間有負向關係存在；第二，在高 CI 投資組合中，預期未來產出水準增加群組的報酬率應高於預期未來產出減少群組；第三，CI-spread 投資組合的報酬率隱含了低 CI 投資組合相較於高 CI 投資組合的異常報酬，因此 CI-spread 投資組合中預期未來產出水準增加群組的報酬率應低於預期未來產出水準減少群組，亦即預期未來產出水準增加群組中低 CI 投資組合的超額報酬應相對較低；第四，第 5 組 CI 投資組合中預期未來產出水準減少公司所帶來的負面影響偏高，因而導致第 5 組 CI 投資組合的整體績效偏低。

⁵ 即使不採用任何資產模型，直接觀察 5 組 CI 投資組合形成後 5 年的名目報酬率亦有相似發現。

4.2.1 指標投資組合—依預期未來產出水準分類

表 trqc-1 同樣彙整了 9 組指標投資組合的基本統計量，惟各組指標投資組合都依其預期未來產出水準分成了正、負兩群組，可由此了解 SZ、BM、預期未來產出水準與各基本統計量之間的關係。首先，觀察表 trqc-1(a)可發現：各組指標投資組合中預期未來產出水準為正或負的股票個數相當，但若以相對比例而言，成長股有相對集中於預期未來產出水準增加群組的現象，其中有 60%的股票預期未來產出水準增加，反之，資產股則相對集中於預期未來產出水準減少群組，有 57%的股票預期未來產出水準減少；接下來，表 trqc(b)~(g)則顯示：不論預期未來產出水準增加或減少群組，各指標投資組合的基本統計量與 SZ、BM 之間的關係和不分類股票的結果相似，包括各指標投資組合的資本投資與 SZ 或 BM 無關、在任一固定 BM 水準之下，指標投資組合的平均風險溢價隨 SZ 增加而不顯著減少、資產股的平均風險溢價高於成長股…等。

另外，表 trqc-1(b)~(j)還提供了各指標投資組合基本統計量與預期未來產出水準之間關係的訊息。控制在相同 SZ 與 BM 水準下，各指標投資組合的基本統計量與預期未來產出水準之間並無一致的絕對關係，例如各指標投資組合的 Scholes-Williams 貝它值或資本投資並不因為預期未來產出水準增加而一定相對高或低，隱含指標投資組合系統性風險或資本投資的高低與預期未來產出水準的增減無絕對關係；其餘各統計量亦然，惟多數情況下，預期未來產出水準減少群組的淨值市價比與平均風險溢價均高於同一 SZ/BM 水準下預期未來產出水準增加群組的淨值市價比與平均風險溢價。

4.2.2 特徵模型—依預期未來產出水準分類

利用預期未來產出水準將股票區分為產出增加與減少兩群組，再進行橫斷面迴歸的結果大致和未分類前的結果相同：表 trqc-2 中多數迴歸係數在 5%水準下並不顯著，其中，貝它係數若非顯著為負，即為不顯著正值，CAPM 仍不成立；另外，多數的市值與淨值市價比係數為負，特別是個股迴歸中有部份預期未來產出水準減少群組的模型顯示有顯著的負規模效應；至於資本投資係數則全數不顯著。基本上，經過預期未來產出水準分類的結果，我們並未發現預期未來產出水準增加公司的資本投資與股票報酬率之間有顯著正向關係，或預期未來產出水準減少公司的資本投資與股票報酬率之間有顯著負向關係。

表 trqc-4 摘錄了依預期未來產出水準分類後各組 CI 與 CI-spread 投資組合在形成後第 1, 2, 3, 4, 5 年的指標調整後報酬率，可發現：各組 CI 投資組合中，預期未來產出水準增加或減少的股票個數相當，並不因為預期未來產出水準增加而有較高的資本投資，或因為預期未來產出水準減少而有相對較低的資本投資，

該現象在表 trqc-1 中即已察覺。其次，觀察不同群組的各組 CI 與 CI-spread 投資組合在形成後第 1 年的不顯著平均調整後報酬率可發現：第一，就預期未來產出水準增加群組而言，其平均調整後報酬不但未隨資本投資的增加而顯著增加，最高 CI 投資組合反而有顯著的最低調整後報酬，而且預期未來產出水準減少群組的平均調整後報酬率亦未隨資本投資的增加而減少；第二，在最高 CI 投資組合中，預期未來產出水準增加群組並未有高於預期未來產出水準減少群組的報酬率；第三，無論是採用第一種或第二種定義的 CI-spread 投資組合，預期未來產出水準增加群組的平均調整後報酬率均高於預期未來產出水準減少群組，顯示低 CI 投資組合在預期未來產出水準增加群組中的異常報酬反而更高；第四，最高 CI 投資組合中預期未來產出水準減少群組的平均報酬率不但不顯著為負，且高於預期未來產出水準增加群組。最後，觀察 CI 投資組合形成後第 2, 3, 4, 5 年的平均調整後報酬率，可發現：幾乎所有調整後報酬率仍不顯著異於 0，即便長時間觀察，資本投資與股票報酬率之間的正向關係仍然存在於預期未來產出水準增加群組，而資本投資與股票報酬率之間的負向關係也不存在於預期未來產出水準減少群組。綜合以上特徵模型的實證結果，預期未來產出水準顯然並非影響長期投資決策成敗的關鍵因素。

4.2.3 因子模型－依預期未來產出水準分類

經過預期未來產出水準分組後，因子模型依然適用於各組 CI 投資組合，表 42 摘錄了因子模型應用於各組 CI 投資組合中不同群組的實證結果。首先觀察 CI 投資組合形成後第 1 年報酬率中未被 3 因子解釋完全的剩餘部份，可發現：第一，就預期未來產出水準增加群組而言，剩餘報酬率並未隨資本投資增加而增加，而預期未來產出水準減少群組的剩餘報酬亦未隨資本投資增加而減少；第二，在最高 CI 投資組合中，預期未來產出水準增加群組的剩餘報酬明顯低於預期未來產出水準減少群組；第三，無論是採用第一或第二種定義的 CI-spread 投資組合，預期未來產出水準增加群組的平均剩餘報酬均高於預期未來產出水準減少群組，表示低 CI 投資組合的異常報酬在預期未來產出水準增加群組中反而偏高；第四，在最高 CI 投資組合中，預期未來產出水準減少群組並未有顯著的負報酬，反而有高於預期未來產出水準增加群組的剩餘報酬。其次，觀察 CI 投資組合形成後第 2, 3, 4, 5 年的剩餘報酬率可發現：雖然低 CI 投資組合的異常報酬消失，且高 CI 投資組合中預期未來產出水準減少群組確實有負且低於預期未來產出水準增加群組的剩餘報酬，然而不容忽略的是，大部份的剩餘報酬均不顯著異於 0，而且資本投資與股票報酬率在預期未來產出水準增加群組的理論正向關係以及在預期未來產出水準減少群組的理論負向關係均不成立。整體而言，採用因子模型的實證結果仍然不支持預期未來產出水準是影響資本支出成效的主因。

4.3 投資機會品質

Shieh (1995)與 Chung, Wright and Charoenwong (1998)利用事件研究法進行資本支出相關研究，發現投資機會品質會影響到資本支出之變動宣告對股票報酬率的影響；根據不同學者意見，本研究中採用兩種定義衡量投資機會品質，分別為 Tobin's q 及其變動值，前者以 1 區分投資機會是否具有價值，後者則以正負分類；若投資機會品質確實為影響長期投資決策成敗的關鍵因素，則實證結果應滿足下列條件：第一，投資機會相對具有價值群組的資本投資與其報酬率之間有正向關係存在，而投資機會相對不具有價值群組的資本投資與其報酬率之間有負向關係存在；第二，在高 CI 投資組合中，投資機會相對具有價值群組的報酬率應高於投資相對不具有價值群組；第三，CI-spread 投資組合中投資相對具有價值群組的報酬率應低於投資機會相對不具有價值群組，亦即投資機會相對具有價值群組中低 CI 投資組合的超額報酬應相對較低；第四，第 5 組 CI 投資組合中投資機會相對不具有價值群組所帶來的負面影響偏高，因而導致第 5 組 CI 投資組合的整體績效偏低。以下首先列示 Tobin's q 的實證結果。

4.3.1 指標投資組合—依 Tobin's q 分類

利用 Tobin's q 大於或小(等)於 1 形成投資機會相對具有與不具有價值的兩群組後，可得到各指標投資組合在不同群組下的基本統計量如表 toq-1。Tobin's q 的分類結果與預期未來產出水準的分類結果有幾點差異：由於絕大多數股票的 Tobin's q 均大於 1，使得各組指標投資組合中 Tobin's q 大於 1 的股票個數明顯偏多，如表 toq-1(a)，在中 SZ/中 BM 以及大 SZ/中 BM 兩組指標投資組合中甚至完全沒有 Tobin's q 小(等)於 1 的股票；其次，任何一組指標投資組合中，投資機會相對具有價值群組的平均規模均大於投資機會相對不具價值群組；此外，除了成長股外，其餘指標投資組合在投資機會相對不具價值情況下的平均風險溢價反而高於投資機會相對具有價值群組，亦即表示控制在相同 SZ/BM 之下，投資機會相對不具價值群組的表現績效反而優於投資機會相對具有價值群組，但其風險溢價的波動程度亦相對高出許多。無論如何，投資機會是否具有價值與資本投資的高低無關，在任一組指標投資組合下，資本投資並不因為投資機會相對具有價值而一定相對較高或偏低，如同資本投資並不因為預期未來產出水準增加而一定相對較高或較低。

4.3.2 特徵模型—依 Tobin's q 分類

依 Tobin's q 分類後的橫斷面迴歸結果摘錄於表 toq-2，絕大多數的迴歸係數在 5%水準下均不顯著；其中，大多數的貝它係數都是不顯著的，特別是投資機會相對具有價值群組的貝它係數均是不顯著為負的，

隱含 CAPM 不成立；其次，無論投資機會相對具有價值或不具有價值群組的市值係數均是不顯著為負的，而投資機會相對具有價值群組的淨值市價比係數多數為負，投資機會相對不具有價值群組的淨值市價比係數則多數為正，無論如何該係數並不顯著；最後，無論是投資機會相對具有價值或不具有價值群組，其資本投資係數通常不顯著為負。基本上，經過 Tobin's q 分類的結果，我們並未發現投資機會相對具有價值群組的資本投資與股票報酬率之間有顯著正向關係，也未發現投資機會相對不具有價值群組的資本投資與股票報酬率之間有顯著負向關係。

利用 Tobin's q 將股票分為投資機會相對具有價值與不具有價值兩群組後，各組 CI 與 CI-spread 投資組合在形成後第 1, 2, 3, 4, 5 年的年平均調整後報酬率彙整於表 toq-4。由於 Tobin's q 小於 1 的股票個數極少，使得 5 組 CI 投資組合中 Tobin's q 小(等)於 1 的股票個數平均在 2 個以下，遠低於 Tobin's q 大於 1 的平均股票個數。其次，觀察 5 組 CI 與 2 組 CI-spread 投資組合在形成後第 1 年的平均年調整後報酬率可發現：第一，在高(含第 4 與第 5 組) CI 投資組合中，投資機會相對具有價值群組確實有高於投資機會相對不具有價值群組的平均報酬率；第二，無論是第一組或是第二組定義的 CI-spread 投資組合中，投資機會相對具有價值群組的平均報酬率均低於投資機會相對不具有價值群組，顯示低 CI 投資組合的異常報酬在投資機會相對具有價值群組中相對較低；第三，最高 CI 投資組合中投資機會相對不具有價值群組的平均報酬確實為負，且低於投資機會相對具有價值群組；但是第一年的平均報酬率多數並不顯著，且投資機會相對具有價值群組的資本投資與股票報酬率之間並無正向關係，反之，投資機會相對不具有價值群組的資本投資與股票報酬率之間亦無負向關係。最後，各組 CI 投資組合形成後第 2, 3, 4, 5 年的年平均調整後報酬率亦不顯著異於 0，且同樣無法支持 Tobin's q 是決定公司長期投資決策成效的關鍵因素。

4.3.3 因子模型—依 Tobin's q 分類

表 toq-42 摘錄了因子模型應用於各組 CI 與 CI-spread 投資組合形成後第 1 年報酬率的實證結果。因子模型的實證結果與特徵模型相似，第一，高 CI 投資組合中投資機會相對具有價值群組的剩餘報酬高於投資機會相對不具有價值群組；第二，在第 2 組定義的 CI-spread 投資組合之下，低 CI 投資組合的異常報酬在投資機會相對具有價值群組中偏低；第三，在最高 CI 投資組合中投資機會相對不具有價值群組的剩餘報酬不但為負，且低於投資機會相對具有價值群組；但是同樣地，第 1 年的平均剩餘報酬在 5%水準下均不顯著，且投資機會相對具有價值群組的剩餘報酬並未隨資本投資的增加而隨之增加，而投資機會相對不具有價值群組的剩餘報酬率亦未隨資本投資的增加而減少。CI 投資組合形成後第 2, 3, 4, 5 年的實證結果亦相似，不

顯著的剩餘報酬否決了 Tobin's q 是影響資本支出與股票報酬率之間關係的主因。接下來 3 小節則是採用 Tobin's q 變動量衡量投資機會品質的實證結果。

4.3.4 指標投資組合—依 Tobin's q 的變動量分類

將股票依 Tobin's q 變動量分類後，再計算 9 組指標投資組合的基本統計量如表 toqc-1，由表 toqc-1(a) 部份可發現：各指標投資組合中投資機會品質好與不好的股票個數大致相同，但若以相對比例而言，成長股相對集中於投資機會具有價值的股票(成長股中有 61% 的股票為 Tobin's q 變動量大於 0 的股票)；反之，資產股則相對集中於投資機會不具有價值的股票(資產股中有 60% 的股票為 Tobin's q 變動量小於 0 的股票)。表 toqc-1(b)~(g) 中其餘基本統計量與 SZ、BM 之間的關係大致和不分類結果相似，但在投資機會相對不具價值群組中並未發現指標投資組合的風險溢價隨 SZ 增加而減少，亦未發現資產股平均風險溢價高於成長股的現象。最後，我們還發現：除了小 SZ/中 BM 投資組合外，在任一給定 SZ/BM 水準下，投資機會相對不具價值群組的平均 BM 高於投資機會相對具有價值群組；且多數情況下，投資機會相對具有價值群組的平均風險溢價高於同一組指標投資組合在投資機會相對不具價值群組的平均風險溢價。無論如何，同樣未發現資本支出水準的高低與投資機會品質之間有任何一致關係。

4.3.5 特徵模型—依 Tobin's q 的變動量分類

利用 Tobin's q 變動量分類股票再進行特徵模型橫斷面迴歸的實證結果摘錄於表 toqc-2，同樣可發現 CAPM 不成立、不顯著的負規模效應與淨值市價比效應等現象。另外，我們還發現在多數情況下，投資機會相對具有價值群組的股票報酬率與資本投資之間有不顯著的正向關係，而投資機會相對不具有價值群組的股票報酬率與資本投資之間則有顯著或不顯著的負向關係，此一結果與我們的推論頗為符合，惟統計量並不顯著。

表 toqc-4 記錄了利用 Tobin's q 變動量分類後的 5 組 CI 投資組合與 2 組 CI-spread 投資組合在形成後 5 年每年平均調整後報酬率的變化情形。5 組 CI 投資組合中投資機會品質優劣的股票個數參半，但仍可觀察出資本投資較高的股票相對集中於投資機會具有價值群組。CI 投資組合形成後第 1 年的平均調整後報酬率均不顯著，但仍可發現：第一，在投資機會相對具有價值群組中，5 組 CI 投資組合的平均調整後報酬率並未如預期地隨資本投資的增加而增加，反而遞減，而投資機會相對不具有價值群組的平均調整後報酬率則未隨資本投資的增加而減少；第二，在最高 CI 投資組合中，投資機會相對具有價值群組的平均報酬率確實

高於投資機會相對不具有價值群組，但卻為不顯著負值；第三，無論投資機會品質優劣，均可發現低 CI 投資組合有高於高 CI 投資組合的異常報酬，但投資機會相對具有價值群組中低 CI 投資組合的異常報酬相對低於投資機會相對不具價值群組；第四，在最高 CI 投資組合中，投資機會相對不具價值群組的平均調整後報酬確實為負，但在統計上並不顯著。第 2 年以後低 CI 投資組合的異常報酬雖然消失，但多數統計量仍不顯著，且資本投資與股票報酬率之間仍缺乏一致關係。整體而言，不顯著的統計量使得特徵模型無法有效解釋資本投資與股票報酬率之間的關係，而實證結果亦無法支持 Tobin's q 的變動量是影響公司長期投資決策成效的主因。

4.3.6 因子模型—依 Tobin's q 的變動量分類

應用因子模型於 5 組 CI 投資組合形成後第 1 年報酬率的結果摘錄於表 toqc-42(a)，因子模型仍有不錯的解釋能力，不顯著的剩餘報酬所闡述的現象與指標調整後報酬率大致雷同：投資機會相對具有價值群組的剩餘報酬並未如預期地隨資本投資的增加而增加，而投資機會相對不具價值群組的剩餘報酬亦未如預期地隨資本投資的增加而減少；低 CI 投資組合在形成後第 1 年仍有高於高 CI 投資組合的異常報酬，但在投資機會相對具有價值群組中則相對較低。即使在第 2 年後，剩餘報酬多數仍不顯著，且無法支持我們的推論；整體而言，應用因子模型的實證結果仍然無法支持 Tobin's q 的變動量是影響企業長期投資決策的主因。

5 結論

資本支出是企業追求企業價值極大化的手段之一，其執行成效反映在市場價值上應使公司股價上漲，然而不論應用特徵模型或是因子模型的實證結果均顯示：股票報酬率與資本支出之間並無顯著與明確關係存在，且資本支出最高的投資組合往往有最低的第 1 年股票報酬率，第 2 年後雖有改善，但仍不為最佳投資標的；即便利用預期未來產出水準或投資機會品質將所有股票加以分類為不同群組，不同群組的資本支出與股票報酬率之間仍無顯著且一致的關係存在，資本支出最高投資組合在第 1 年依然為表現績效最差的一組投資組合；無論如何，若以長期投資的角度衡量，實證結果建議投資人不宜將資本投資最低的投資組合作為長期投資工具。

實證結果無法支持資本支出與股票報酬率之間有正向關係存在可能是因為研究方法或公司屬性所致。實證中我們分別應用特徵模型與因子模型來解釋資本投資組合形成後 5 年的股票報酬率，其中隱含了資本支出的影響長達 5 年，例如 1990 年 7 月起至 1991 年 6 月底的報酬可能至少會受到 1989 年與 1988 年兩年

度資本投資影響，但在實證方法上我們卻只分別獨立觀察 1990 年 7 月至 1991 年 6 月之間報酬與 1989 年度以及 1988 年度資本投資之間的關係，忽略了該期間報酬除了會受到 1989 年度資本投資的影響外，還同時會受到 1988 年度資本投資，甚至更早之前資本投資的交相影響，則僅觀察 1989 年度資本投資與該期間報酬的關係或只觀察 1988 年資本投資對該期間報酬的影響均有不盡完善之處，而可能影響到實證結果之正確性；其次，預期未來產出水準與投資機會品質等公司屬性的替代變數亦可能有不盡妥善之處而影響到分類群組的實證結果；因此，未來可針對實證方法的改進或是公司屬性的替代變數以及其它可能影響企業資本投資成效的公司屬性繼續進行研究。

Table 1 Descriptive statistics for the 9 SZ-BM portfolios (1987/7 to 2000/6)

a. number of firms

		Book-to-market equity		
		Low	Medium	High
Size	Small	17	20	25
	Medium	20	21	22
	Large	25	22	16

b. value-weighted Scholes-Williams beta

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.8136	0.7451	0.7976
	Medium	0.9138	0.8409	0.8074
	Large	0.9138	0.8477	0.8148

c. value-weighted size

		Book-to-market equity		
		Low	Medium	High
Size	Small	3,279	3,386	3,466
	Medium	7,792	7,585	7,413
	Large	80,301	45,769	46,612

Unit: one million NT dollar

d. value-weighted book-to-market equity

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.2752	0.4416	0.6713
	Medium	0.2842	0.4279	0.6597
	Large	0.2647	0.4368	0.6720

e. value-weighted capital investment change rate (scaled by sales)

		Book-to-market equity		
		Low	Medium	High
Size	Small	2.1894	2.0237	-0.0794
	Medium	-0.1230	-3.8580	0.0796
	Large	5.5741	0.1112	7.5207

f. value-weighted capital investment increasing (decreasing) rate (scaled by sales)

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.0027	18.7508	2.3478
	Medium	1.1633	5.5746	2.1506
	Large	6.0660	0.7383	7.6754

g. value-weighted capital investment change rate (scaled by total assets)

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.5766	0.4067	0.8253
	Medium	0.4528	3.5116	0.6228
	Large	6.4957	0.4262	0.6846

h. value-weighted capital investment increasing (decreasing) rate (scaled by total assets)

		Book-to-market equity		
		Low	Medium	High
Size	Small	-0.3172	2.6195	0.9881
	Medium	1.0620	2.9409	0.9122
	Large	6.8210	0.6730	0.8761

i. monthly value-weighted risk premium

		Book-to-market equity		
		Low	Medium	High
Size	Small	2.0981	1.8783	1.9835
	Medium	1.5090	1.2299	1.4839
	Large	1.1928	1.1351	1.2314
Unit: %				

j. standard deviation of risk premium

		Book-to-market equity		
		Low	Medium	High
Size	Small	15.43	15.92	16.40
	Medium	14.86	13.50	15.79
	Large	12.83	12.50	14.13
Unit: %				

Table 2 Results from Fama-MacBeth cross-sectional regression

A. Regression based on portfolios

	Intercept	Beta	Size	Book-to-market	Capital Investment Change Rate scaled by Sales	Capital Investment Increasing (decreasing) Rate scaled by Sales	Capital Investment Change Rate scaled by Total Assets	Capital Investment Increasing (decreasing) Rate scaled by Total Assets
(a)	3.1598 (1.54)	-2.8771 (-1.34)						
(b)	6.0319 (1.29)		-0.2841 (-1.11)					
(c)	1.4646 (1.17)			-0.1596 (-0.33)				
(d)	1.5554 (1.43)				-0.0420 (-0.46)			
(e)	1.5163 (1.43)					-0.0484 (-0.44)		
(f)	1.6298 (1.48)						-0.1529 (-0.96)	
(g)	1.5063 (1.44)							-0.1088 (-0.62)
(h)	3.7745 (0.85)	-1.4195 (-0.88)	-0.0911 (-0.36)					
(i)	3.4475 (1.52)	-2.8851 (-1.23)		0.3314 (0.65)				
(j)	3.4764 (1.60)	-3.2745 (-1.39)			-0.0984 (-0.94)			
(k)	3.2916 (1.62)	-3.0504 (-1.39)				-0.0252 (-0.23)		
(l)	3.3246 (1.62)	-3.0273 (-1.38)					-0.1356 (-0.83)	
(m)	3.2390 (1.63)	-2.9695 (-1.40)						-0.0742 (-0.46)
(n)	6.3478 (1.34)		-0.3166 (-1.20)	-0.1580 (-0.33)				
(o)	6.7222 (1.42)		-0.3293 (-1.27)		0.0131 (0.16)			
(p)	6.3789 (1.35)		-0.3052 (-1.17)			-0.0183 (-0.16)		
(q)	6.7700 (1.42)		-0.3306 (-1.27)				0.0094 (0.06)	
(r)	6.6550 (1.43)		-0.3225 (-1.25)					-0.0297 (-0.18)
(s)	1.6514 (1.30)			-0.0976 (-0.19)	-0.0848 (-0.90)			

A. Regression based on portfolios (continue)

Intercept	Beta	Size	Book-to-market	Capital Investment Change Rate scaled by Sales	Capital Investment Increasing (decreasing) Rate scaled by Sales	Capital Investment Change Rate scaled by Total Assets	Capital Investment Increasing (decreasing) Rate scaled by Total Assets
(t)	1.4190 (1.17)	-0.2765 (-0.57)			-0.0687 (-0.74)		
(u)	1.7930 (1.38)	-0.0071 (-0.01)				-0.2290 (-1.53)	
(v)	1.3613 (1.15)	-0.2878 (-0.60)					-0.0879 (-0.58)
(w)	5.8117 (1.26)	-0.2227 (-0.85)					
(x)	3.6026 (0.79)	-0.1015 (-0.41)		-0.0295 (-0.30)			
(y)	3.1524 (0.68)	-0.12738 (-0.24)			-0.0100 (-0.09)		
(z)	3.7759 (0.81)	-0.0936 (-0.35)				-0.0391 (-0.23)	
(aa)	4.4864 (1.01)	-0.1275 (-0.50)					-0.0433 (-0.27)
(ab)	3.9542* (1.72)	-0.3280 (-1.40)	0.3679 (0.72)	-0.1019 (-1.11)			
(ac)	3.3081 (1.36)	-2.7438 (-1.07)	0.1534 (0.26)		-0.0048 (-0.05)		
(ad)	3.8459* (1.70)	-3.1834 (-1.38)	0.3758 (0.72)			-0.1281 (-0.91)	
(ae)	3.4438 (1.51)	-3.0881 (-1.27)	0.1311 (0.24)				0.0190 (0.14)
(af)	6.5489 (1.39)	-0.3257 (-1.24)	-0.1497 (-0.30)	-0.0162 (-0.23)			
(ag)	6.5930 (1.36)	-0.3221 (-1.19)	-0.1092 (-0.22)		-0.0665 (-0.74)		
(ah)	6.2922 (1.33)	-0.3148 (-1.19)	-0.2422 (-0.50)			0.0086 (0.07)	
(ai)	6.8935 (1.45)	-0.3380 (-1.28)	-0.1285 (-0.26)				-0.1237 (-1.04)
(aj)	5.8358 (1.25)	-1.6420 (-0.98)	-0.2071 (-0.38)	-0.0497 (-0.64)			
(ak)	5.6571 (1.18)	1.7295 (0.63)	-0.3735 (-1.34)		-0.0016 (-0.02)		
(al)	5.3252 (1.12)	-1.8167 (-1.06)	-0.1694 (-0.61)			-0.0493 (-0.35)	
(am)	6.0946 (1.31)	0.1895 (0.09)	-0.3056 (-1.13)				-0.1116 (-0.86)

B. Regression based on individual stocks

	Intercept	Beta	Size	Book-to-market	Capital Investment Change Rate scaled by Sales	Capital Investment Increasing (decreasing) Rate scaled by Sales	Capital Investment Change Rate scaled by Total Assets	Capital Investment Increasing (decreasing) Rate scaled by Total Assets
(a)	3.0418 (1.47)	-2.7663 (-1.24)						
(b)	7.8479 (1.49)		-0.4001 (-1.36)					
(c)	1.2269 (1.01)			-0.2231 (-0.47)				
(d)	1.5715 (1.41)				0.0186 (0.96)			
(e)	1.5593 (1.40)					0.0185 (0.74)		
(f)	1.5847 (1.42)						0.0014 (0.07)	
(g)	1.5724 (1.41)							0.0112 (0.50)
(h)	7.1461 (1.52)	-1.1072 (-0.84)	-0.3154 (-1.18)					
(i)	3.6709* (1.70)	-3.8203* (-1.75)		-0.1471 (-0.35)				
(j)	3.0016 (1.44)	-2.7224 (-1.21)			0.0180 (0.87)			
(k)	3.0243 (1.46)	-2.7522 (-1.23)				0.0169 (0.68)		
(l)	3.0387 (1.46)	-2.7473 (-1.23)					0.0046 (0.21)	
(m)	3.0555 (1.47)	-2.7786 (-1.24)						0.0097 (0.43)
(n)	7.1942 (1.46)		-0.3723 (-1.35)	-0.1770 (-0.43)				
(o)	7.8955 (1.48)		-0.4030 (-1.36)		0.0219 (1.09)			
(p)	7.8794 (1.48)		-0.4020 (-1.36)			0.0164 (0.65)		
(q)	7.8910 (1.49)		-0.4020 (-1.36)				0.0094 (0.45)	
(r)	7.9404 (1.49)		-0.4051 (-1.37)					0.0071 (0.32)
(s)	1.2122 (1.00)			-0.2453 (-0.52)	0.0169 (0.86)			

B. Regression based on individual stocks (continue)

Intercept	Beta	Size	Book-to-market	Capital Investment Change Rate scaled by Sales	Capital Investment Increasing (decreasing) Rate scaled by Sales	Capital Investment Change Rate scaled by Total Assets	Capital Investment Increasing (decreasing) Rate scaled by Total Assets
(t)	1.2096 (1.00)	-0.2370 (-0.51)			0.0151 (0.62)		
(u)	1.2333 (1.01)	-0.2366 (-0.50)				0.0006 (0.03)	
(v)	1.2184 (1.01)	-0.2433 (-0.52)					0.0091 (0.42)
(w)	7.3467 (1.59)	-0.3121 (-1.17)	-0.2474 (-0.61)				
(x)	7.0559 (1.49)	-1.0621 (-0.80)	-0.3126 (-1.15)	0.0210 (1.00)			
(y)	7.1785 (1.51)	-1.1143 (-0.85)	-0.3169 (-1.17)		0.0163 (0.65)		
(z)	7.1454 (1.51)	-1.0993 (-0.83)	-0.3150 (-1.16)			0.0090 (0.41)	
(aa)	7.2579 (1.53)	-1.1393 (-0.86)	-0.3201 (-1.18)				0.0070 (0.31)
(ab)	3.6531* (1.69)	-3.8181* (-1.75)	-0.1691 (-0.40)	0.0187 (0.92)			
(ac)	3.7193* (1.72)	-3.8992* (-1.78)	-0.1589 (-0.38)		0.0169 (0.69)		
(ad)	3.6981* (1.71)	-3.8457* (-1.77)	-0.1630 (-0.39)			0.0062 (0.28)	
(ae)	3.7390* (1.73)	-3.9261* (-1.79)	-0.1717 (-0.41)				0.0120 (0.55)
(af)	7.0643 (1.43)	-0.3653 (-1.31)	-0.2002 (-0.49)	0.0210 (1.05)			
(ag)	7.0689 (1.43)	-0.3647 (-1.31)	-0.1830 (-0.45)		0.0147 (0.60)		
(ah)	7.0689 (1.43)	-0.3646 (-1.31)	-0.1968 (-0.48)			0.0093 (0.44)	
(ai)	7.1298 (1.44)	-0.3684 (-1.33)	-0.1958 (-0.48)				0.0073 (0.34)
(aj)	7.0465 (1.51)	-1.6567 (-1.46)	-0.2987 (-0.67)	0.0209 (1.02)			
(ak)	7.1965 (1.54)	-1.7756 (-1.58)	-0.3008 (-1.12)		0.0156 (0.64)		
(al)	7.1234 (1.53)	-1.6936 (-1.50)	-0.3003 (-1.12)	-0.2675 (-0.66)		0.0097 (0.45)	
(am)	7.2329 (1.55)	-1.7808 (-1.57)	-0.3032 (-1.13)	-0.2684 (-0.68)			0.0086 (0.40)

Table 3 Monthly Return Series for Characteristic-Adjusted Capital Investment Portfolio: July 1987 to June 2000

Capital Investment	Scaled by			Sales			Total Assets		
	Mean return (t-statistics)/ The number of positive return	Change Rate	Number	Mean	Increasing (Decreasing) Rate	Number	Mean	Increasing (Decreasing) Rate	Number
Lowest	0.0944 (0.31)		77	0.0392 (0.13)		69	0.0984 (0.32)	0.0848 (0.26)	73
2 nd	-0.0165 (-0.10)		82	0.0967 (0.53)		86	-0.1369 (-0.94)	0.0513 (0.33)	83
3 rd	-0.0321 (-0.19)		82	-0.0083 (-0.05)		80	0.2878 (1.55)	0.0700 (0.37)	79
4 th	0.1378 (0.79)		71	0.3083 (1.62)		79	0.1086 (0.70)	0.1763 (1.00)	77
Highest	-0.2036 (-0.91)		74	-0.1965 (-0.92)		67	-0.3058 (-1.43)	-0.3288* (-1.66)	67
CI-spread 1	0.0719 (0.28)		72	0.0121 (0.05)		79	0.0793 (0.32)	0.1443 (0.60)	86
CI-spread 2	0.2980 (0.67)		74	0.2358 (0.52)		81	0.4042 (0.92)	0.4136 (0.91)	84

• * represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

**Table 4 Yearly Returns on the Characteristic-Adjusted Capital Investment Portfolio at Year 1, 2, 3, 4, and 5:
1987 to 1999**

(Capital Investment is scaled by Sales and defined as change rate of capital expenditure)

Formation Year		Returns in Year 1	Returns in Year 2	Returns in Year 3	Returns in Year 4	Returns in Year 5	Cumulative Returns
1987	lowest	-4.3950	27.2410	-6.3242	14.2289	-1.5600	
	2 nd	-0.1900	-10.5455	9.5165	-3.7034	2.6091	
	3 rd	-3.4929	4.3337	2.3743	-1.8173	-0.5039	
	4 th	-4.7703	-17.9587	5.0130	13.1346	-5.3208	
	highest	16.5415	5.6015	-3.5927	-2.6274	6.3910	
1988	lowest	38.5061	-8.2421	10.0246	0.5918	1.9081	
	2 nd	8.3902	3.7350	-10.1193	9.6441	2.2869	
	3 rd	-13.2647	0.0289	8.7960	-2.1314	0.2272	
	4 th	-2.1548	6.2090	1.5281	-4.5145	-0.2661	
	highest	-13.3012	2.9255	7.1855	2.1377	0.2465	
1989	lowest	-9.8703	5.3384	-2.6789	-1.0616	-18.1746	
	2 nd	6.9875	4.1244	-6.4635	-0.6626	-12.6578	
	3 rd	5.9646	-2.5563	2.2589	7.0914	7.5645	
	4 th	2.6502	3.2677	5.6458	-10.6177	-0.7694	
	highest	-1.0460	-1.4336	0.6655	7.2248	19.2684	
1990	lowest	8.9005	-1.0815	3.8059	-21.2669	-8.2007	
	2 nd	-5.8400	-2.0693	-2.5947	1.6633	-7.4101	
	3 rd	-5.3975	1.3081	-0.3489	7.1440	-6.1356	
	4 th	5.5047	2.8060	-2.6095	1.8463	6.2493	
	highest	-2.3920	-3.7819	6.4955	8.6764	13.4926	
1991	lowest	4.2727	2.7432	4.6130	-3.7697	-7.5370	
	2 nd	-2.5277	3.0028	12.6341	1.2805	-3.3977	
	3 rd	-1.2148	3.4980	6.8642	2.5227	5.2738	
	4 th	1.0299	-5.1606	2.5407	1.4365	7.8445	
	highest	-0.5831	0.9850	-15.8009	-3.6107	4.6793	
1992	lowest	-2.6709	-12.1823	1.7415	-13.3482	0.2838	
	2 nd	5.3237	4.1827	5.7891	-5.4970	3.4298	
	3 rd	5.6162	1.2150	-2.9840	20.7489	-4.1561	
	4 th	-3.9413	5.1208	3.0165	-5.6993	-1.2266	
	highest	-5.0824	1.2992	-5.8351	1.5593	-19.1936	
1993	lowest	-2.3928	2.2096	-2.5959	-2.9882	9.0606	
	2 nd	-1.8153	-3.9995	5.7423	-8.2481	-4.0705	
	3 rd	8.7538	8.8943	-1.8372	5.8855	-2.5070	
	4 th	0.8443	-4.2225	0.3698	3.6512	-0.1241	
	highest	-11.0938	-6.9201	2.4600	-24.4794	-2.6176	
1994	lowest	1.0297	-15.3226	-0.6374	6.2361	-21.2872	
	2 nd	6.4769	0.4390	-10.0950	6.8053	-2.4823	
	3 rd	2.6430	1.3361	-0.4450	-1.3275	10.0815	
	4 th	-9.5780	6.8410	-2.4337	-3.2540	-7.4139	
	highest	-0.4861	2.1863	-2.6149	-6.0706	-9.9211	
1995	lowest	9.3640	-8.1017	-9.1838	6.1319	-16.5313	
	2 nd	-14.0835	-6.7415	-2.2265	-14.6846	-4.0119	
	3 rd	-3.5166	-7.0945	6.2985	-10.5268	-16.1078	
	4 th	8.2932	5.7196	-0.8869	8.6910	-3.6785	
	highest	-2.9197	3.5584	-3.4637	5.2338	1.7197	
1996	lowest	-3.3571	-4.8894	-14.7723	-12.1068	-	
	2 nd	-4.7951	12.3440	-21.5798	-12.9200	-	
	3 rd	1.2872	-3.3726	12.1906	-9.6654	-	
	4 th	4.3969	-1.0013	24.3975	5.4190	-	
	highest	-0.9083	0.7257	6.4325	-0.2603	-	

**Table 4 Yearly Returns on the Characteristic-Adjusted Capital Investment Portfolio at Year 1, 2, 3, 4, and 5:
1987 to 1999**

(continue)

Formation Year		Returns in Year 1	Returns in Year 2	Returns in Year 3	Returns in Year 4	Returns in Year 5	Cumulative Returns
1997	lowest	3.2144	-11.9678	-7.0175	-	-	
	2 nd	-3.7270	-21.7765	-3.1123	-	-	
	3 rd	1.7520	1.7311	1.2150	-	-	
	4 th	3.8597	5.0044	10.9464	-	-	
	highest	-7.4175	9.2226	-9.2103	-	-	
1998	lowest	-29.3525	2.7947	-	-	-	
	2 nd	3.3936	0.8638	-	-	-	
	3 rd	-4.3164	-2.0451	-	-	-	
	4 th	16.5256	-0.6872	-	-	-	
	highest	-3.5721	0.7594	-	-	-	
1999	lowest	1.4724	-	-	-	-	
	2 nd	-0.1645	-	-	-	-	
	3 rd	0.1764	-	-	-	-	
	4 th	-1.1664	-	-	-	-	
	highest	0.4962	-	-	-	-	
Number of positive returns/ Observations	lowest	7/13	7/12	4/11	4/10	3/9	
	2 nd	5/13	7/12	4/11	4/10	3/9	
	3 rd	7/13	8/12	7/11	5/10	4/9	
	4 th	8/13	7/12	8/11	6/10	2/9	
	highest	2/13	9/12	5/11	5/10	6/9	
Mean (t-statistics)	lowest	1.1324 (0.27)	-1.7884 (-0.54)	-2.0932 (-0.98)	-2.7353 (-0.82)	-6.8932* (-2.02)	
	2 nd	-0.1978 (-0.11)	-1.3700 (-0.54)	-2.0463 (-0.68)	-2.6322 (-1.05)	-2.8561 (-1.65)	
	3 rd	-0.3854 (-0.24)	0.6064 (0.51)	3.1257* (2.16)	1.7924 (0.62)	-0.6959 (-0.26)	
	4 th	1.6534 (0.91)	0.4949 (0.24)	4.3207* (1.85)	1.0093 (0.45)	-0.5228 (-0.32)	
	highest	-2.4434 (-1.24)	1.2607 (1.05)	-1.5708 (-0.73)	-1.2217 (-0.41)	1.5628 (0.41)	

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

**Table 5 Yearly Returns on the Characteristic-Adjusted Capital Investment Portfolio at Year 1, 2, 3, 4, and 5:
1987 to 1999**

(Capital Investment is scaled by Sales and defined as increasing (decreasing) rate of capital expenditure)

Formation Year		Returns in Year 1	Returns in Year 2	Returns in Year 3	Returns in Year 4	Returns in Year 5	Cumulative Returns
1987	lowest	-0.0075	-5.8962	7.5137	0.5005	3.2221	
	2 nd	1.2949	-3.1852	0.7611	2.9744	1.2595	
	3 rd	-8.4137	-7.6557	3.7589	4.3142	-4.9116	
	4 th	1.0168	6.5707	0.0157	3.4860	5.5021	
	highest	12.9964	18.8459	-5.3470	5.4392	-4.5806	
1988	lowest	8.3665	-3.3035	6.2422	6.8955	-0.0142	
	2 nd	-8.7904	3.8839	1.3566	-1.4865	6.2788	
	3 rd	-3.9484	6.2075	1.4629	-1.4723	-2.2424	
	4 th	35.1941	-2.8361	3.7547	-1.3254	1.5328	
	highest	-13.4057	-0.8446	5.4888	2.7056	-2.0133	
1989	lowest	-7.1756	6.5257	-4.3585	-8.1956	-29.0619	
	2 nd	14.7399	-4.0537	3.6277	3.4511	-4.9145	
	3 rd	-1.3152	-2.1277	0.3519	7.3486	6.0133	
	4 th	3.3515	12.8457	4.9541	-7.7094	0.8454	
	highest	-2.9074	-4.7975	-3.4832	9.5935	19.7688	
1990	lowest	6.4598	-4.6751	6.0520	-2.7919	-3.8497	
	2 nd	-3.4237	2.2496	-6.2804	1.0348	-14.1474	
	3 rd	-0.4329	-3.6172	4.6572	10.7319	0.8449	
	4 th	5.9553	13.1677	-6.5999	-5.4384	2.4873	
	highest	-4.5109	-5.2328	5.3904	-8.1118	12.2295	
1991	lowest	2.1833	0.8049	5.4687	0.9587	-15.7621	
	2 nd	-3.5336	2.5448	9.4452	3.4024	-1.0734	
	3 rd	-0.1327	5.2606	10.5902	1.3218	3.7421	
	4 th	1.1718	-4.5563	0.9702	-1.3888	12.9348	
	highest	0.8839	0.9302	-15.0569	-5.8625	4.9054	
1992	lowest	4.2203	-4.8041	9.5257	-13.3378	0.8879	
	2 nd	2.8207	2.1832	2.5750	6.2949	-4.2899	
	3 rd	1.4337	-2.0142	-9.6476	17.7942	-0.7740	
	4 th	-4.0486	6.7471	5.5289	-6.5657	-1.6355	
	highest	-4.1929	1.2765	-4.6534	0.6284	-16.7420	
1993	lowest	0.7501	-0.5752	7.2980	-12.3470	3.5536	
	2 nd	5.2999	3.8018	-8.4684	7.0919	0.2347	
	3 rd	3.4286	6.9243	1.7141	4.7690	-5.1397	
	4 th	-0.1109	-10.3421	0.0538	-5.8925	4.3366	
	highest	-11.6907	-4.3554	3.9896	-16.7458	-5.1584	
1994	lowest	-0.1876	-10.2772	-2.4971	9.9950	-20.4589	
	2 nd	4.0943	0.2856	-11.1680	3.7942	2.0373	
	3 rd	4.6267	-0.2770	3.4966	-1.8838	9.3218	
	4 th	-6.8638	10.2351	-1.6034	-8.7459	0.3428	
	highest	-1.8926	-4.2935	-2.0512	0.4208	-24.1145	
1995	lowest	9.6028	-12.6232	-12.4113	-7.6983	-16.4198	
	2 nd	-8.1829	-10.9786	7.0925	6.0341	-11.6042	
	3 rd	-2.0933	-0.5759	7.1985	-22.5563	-11.8202	
	4 th	-2.4171	13.8617	-0.9960	16.5085	6.7289	
	highest	2.6878	-2.4087	-8.2211	4.0493	-18.8252	
1996	lowest	-6.0195	-3.3270	-15.9931	-9.8319	-	
	2 nd	5.5695	10.8836	-11.3402	-15.8337	-	
	3 rd	-6.3770	-3.9865	11.7103	-10.9437	-	
	4 th	11.1892	-2.7156	27.8057	3.3754	-	
	highest	-0.4719	2.4412	0.9810	8.0067	-	

**Table 5 Yearly Returns on the Characteristic-Adjusted Capital Investment Portfolio at Year 1, 2, 3, 4, and 5:
1987 to 1999**

(continue)

Formation Year		Returns in Year 1	Returns in Year 2	Returns in Year 3	Returns in Year 4	Returns in Year 5	Cumulative Returns
1997	lowest	2.9270	-33.5380	-17.0037	-	-	
	2 nd	4.6216	-15.7106	-5.0874	-	-	
	3 rd	2.0800	0.5978	1.9498	-	-	
	4 th	2.2015	6.4441	7.9523	-	-	
	highest	-8.6905	15.6842	-0.0701	-	-	
1998	lowest	-27.9834	-0.0218	-	-	-	
	2 nd	0.5109	-4.5349	-	-	-	
	3 rd	11.0379	8.5783	-	-	-	
	4 th	5.7776	-9.7476	-	-	-	
	highest	-3.8256	3.0014	-	-	-	
1999	lowest	12.9857	-	-	-	-	
	2 nd	0.0624	-	-	-	-	
	3 rd	-1.1883	-	-	-	-	
	4 th	-4.3202	-	-	-	-	
	highest	4.3645	-	-	-	-	
Number of positive returns/ Observations	lowest	8/13	2/12	6/11	4/10	3/9	
	2 nd	9/13	7/12	6/11	8/10	4/9	
	3 rd	5/13	5/12	10/11	6/10	4/9	
	4 th	8/13	7/12	8/11	3/10	8/9	
	highest	4/13	6/12	4/11	7/10	3/9	
Mean (t-statistics)	lowest	0.4709 (0.16)	-5.9759* (-2.06)	-0.9239 (-0.30)	-3.5853 (-1.41)	-8.6558* (-2.17)	
	2 nd	1.1603 (0.66)	-1.0525 (-0.51)	-1.5897 (-0.73)	1.6758 (0.80)	-2.9132 (-1.33)	
	3 rd	-0.0996 (-0.07)	0.6095 (0.42)	3.3857* (1.97)	0.9424 (0.26)	-0.5518 (-0.26)	
	4 th	3.6998 (1.25)	3.3062 (1.29)	3.8033 (1.42)	-1.3696 (-0.57)	3.6750** (2.53)	
	highest	-2.3581 (-1.22)	1.6872 (0.74)	-2.0939 (-1.11)	0.0124 (0.01)	-3.8367 (-0.79)	

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table 6 Yearly Returns on the Characteristic-Adjusted Capital Investment Portfolio at Year 1, 2, 3, 4, and 5:
1987 to 1999

(Capital Investment is scaled by Total Assets and defined as change rate of capital expenditure)

Formation Year		Returns in Year 1	Returns in Year 2	Returns in Year 3	Returns in Year 4	Returns in Year 5	Cumulative Returns
1987	lowest	-15.1491	13.8335	-9.4321	23.1145	6.6338	
	2 nd	-0.3591	-8.2154	8.2117	0.0647	2.5725	
	3 rd	-4.8177	3.1764	2.6169	-4.9358	-0.9439	
	4 th	-3.5647	-19.2566	6.9784	12.8922	-5.8267	
	highest	18.7895	16.2280	-3.4504	-2.2108	0.4398	
1988	lowest	36.1452	-5.3637	7.9919	-0.4527	3.1444	
	2 nd	7.2039	-4.4846	-12.1162	11.7968	0.0601	
	3 rd	11.4926	-0.3203	6.7871	2.6056	0.3115	
	4 th	-9.2601	6.9190	3.3763	-3.9876	1.2194	
	highest	-14.9194	3.6186	8.3109	-0.9727	-1.0261	
1989	lowest	-11.1022	5.8744	-3.0057	-0.5945	-18.4548	
	2 nd	8.0223	6.5633	-6.4944	-1.0627	-10.0944	
	3 rd	8.2949	-2.7158	0.9892	7.1331	4.5604	
	4 th	5.2325	3.9695	4.7267	-7.7392	0.1811	
	highest	-4.4844	-6.0084	3.3060	6.2427	23.6440	
1990	lowest	8.7502	-3.3754	3.0391	-22.2105	-6.9816	
	2 nd	-6.1936	-0.1153	-3.1870	4.0839	-6.9620	
	3 rd	-3.6769	1.7843	-1.8104	4.4489	-8.1070	
	4 th	2.6697	2.4746	-0.0925	3.7265	5.3191	
	highest	-2.4852	-3.5334	6.4463	8.3393	13.6776	
1991	lowest	4.2368	1.6482	5.3441	-3.1669	-7.4523	
	2 nd	-0.5801	1.4262	14.3057	1.8426	-2.2901	
	3 rd	-1.6939	2.3962	5.4442	3.5593	2.9053	
	4 th	12.0838	-6.2898	0.1065	-5.4722	5.2868	
	highest	-8.0936	3.7532	-11.2630	0.3177	9.1304	
1992	lowest	-1.3592	-15.1084	-0.9751	-14.3979	-1.5524	
	2 nd	2.1158	-2.6486	12.2269	-9.3299	3.0680	
	3 rd	5.6221	8.4511	-2.3645	16.5715	1.2266	
	4 th	-4.0448	3.2841	-6.1170	-0.5189	-8.3460	
	highest	-4.2791	0.0157	2.4311	-0.5108	-17.2027	
1993	lowest	3.5910	3.0161	5.9099	-8.9446	2.3483	
	2 nd	-6.4015	-5.6095	-2.5994	-5.9864	-1.5962	
	3 rd	9.3991	10.5947	-2.0340	7.8278	-3.8685	
	4 th	-1.3535	-10.8642	3.0413	-3.8989	5.8254	
	highest	-12.9824	-7.0276	2.4761	-18.9575	-5.2976	
1994	lowest	0.6992	-15.7686	-0.3929	5.8537	-21.7221	
	2 nd	4.0359	0.9782	-10.6723	4.8123	0.2406	
	3 rd	2.7526	1.4089	-4.3724	1.9605	1.8613	
	4 th	-4.2682	4.1335	1.1252	-3.5871	4.1018	
	highest	-1.9792	4.2338	-1.5716	-6.0459	-10.6881	
1995	lowest	9.9961	-8.9776	-9.7759	8.0693	-15.4581	
	2 nd	-14.5709	6.6961	-6.4673	-2.0052	-2.8330	
	3 rd	-4.5085	-5.0827	5.3004	-18.3828	-18.6253	
	4 th	11.3995	3.8748	-1.7596	10.1388	-1.4474	
	highest	-4.0919	3.7959	0.1215	4.0446	-0.4619	
1996	lowest	1.7000	-1.4962	-17.9819	-1.5420	-	
	2 nd	-11.2038	9.4996	-22.3751	-22.4930	-	
	3 rd	-4.6588	-0.7704	2.6800	-11.7564	-	
	4 th	12.1786	-0.8031	31.6803	3.2780	-	
	highest	-5.8447	-1.1225	2.8618	2.1364	-	

Table 6 Yearly Returns on the Characteristic-Adjusted Capital Investment Portfolio at Year 1, 2, 3, 4, and 5:
1987 to 1999

(continue)

Formation Year		Returns in Year 1	Returns in Year 2	Returns in Year 3	Returns in Year 4	Returns in Year 5	Cumulative Returns
1997	lowest	3.3967	-13.2120	-6.0776	-	-	
	2 nd	-9.8584	-19.6314	15.0053	-	-	
	3 rd	8.8464	-6.6884	5.5653	-	-	
	4 th	1.0628	15.4242	2.7091	-	-	
	highest	-7.7790	6.3654	-6.7562	-	-	
1998	lowest	-30.6358	1.9494	-	-	-	
	2 nd	2.9004	3.3594	-	-	-	
	3 rd	21.0936	5.7776	-	-	-	
	4 th	-2.6162	-5.2769	-	-	-	
	highest	-4.7313	-7.0029	-	-	-	
1999	lowest	5.0814	-	-	-	-	
	2 nd	3.5384	-	-	-	-	
	3 rd	-3.2472	-	-	-	-	
	4 th	-2.5726	-	-	-	-	
	highest	5.1778	-	-	-	-	
Number of positive returns/ Observations	lowest	9/13	5/12	4/11	3/10	3/9	
	2 nd	6/13	6/12	4/11	5/10	4/9	
	3 rd	7/13	7/12	7/11	7/10	5/9	
	4 th	6/13	7/12	8/11	4/10	6/9	
	highest	2/13	7/12	7/11	5/10	4/9	
Mean (t-statistics)	lowest	1.1808 (0.28)	-3.0817 (-1.18)	-2.3051 (-0.96)	-1.4271 (-0.36)	-6.6105* (-1.95)	
	2 nd	-1.6424 (-0.81)	-2.1312 (-0.96)	-1.2875 (-0.35)	-1.8277 (-0.62)	-1.9816 (-1.39)	
	3 rd	3.4537 (1.54)	1.5010 (1.01)	1.7092 (1.46)	0.9032 (0.28)	-2.2977 (-0.96)	
	4 th	1.3036 (0.67)	-0.2009 (-0.08)	4.1614 (1.41)	0.4832 (0.22)	0.7015 (0.41)	
	highest	-3.6695 (-1.58)	1.1097 (0.57)	0.2648 (0.15)	-0.7617 (-0.32)	1.3573 (0.33)	

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table 7 Yearly Returns on the Characteristic-Adjusted Capital Investment Portfolio at Year 1, 2, 3, 4, and 5:
1987 to 1999

(Capital Investment is scaled by Total Assets and defined as increasing (decreasing) rate of capital expenditure)

Formation Year		Returns in Year 1	Returns in Year 2	Returns in Year 3	Returns in Year 4	Returns in Year 5	Cumulative Returns
1987	lowest	-0.6076	-7.1218	6.7826	-1.5335	3.7624	
	2 nd	2.0204	4.9910	-0.7817	0.9435	-0.7184	
	3 rd	-8.2952	-13.8064	6.3736	8.2697	-4.1487	
	4 th	0.6446	3.1996	0.8519	2.9325	6.5107	
	highest	11.1065	20.5175	-6.1846	6.4543	-4.0010	
1988	lowest	2.3900	5.8861	-1.6367	5.8949	0.2606	
	2 nd	14.0528	-4.8467	3.0516	6.1726	2.4226	
	3 rd	-8.9368	7.4289	3.4350	-3.7426	1.6573	
	4 th	5.7333	-1.9209	-1.9740	-2.1279	2.5802	
	highest	3.2058	-5.2986	16.2923	2.0772	-4.9899	
1989	lowest	-6.6912	7.1455	-4.2433	-8.3544	-29.8085	
	2 nd	6.3333	-8.1606	3.6305	7.3226	-5.6470	
	3 rd	3.0251	5.8083	-2.0018	2.9889	11.9730	
	4 th	5.3462	8.7745	6.4732	-4.9982	-4.7987	
	highest	-4.1814	-7.3101	-2.3398	8.4854	19.5742	
1990	lowest	14.4074	-7.0647	4.0499	-2.1151	-2.6692	
	2 nd	-11.1855	0.5063	-4.7896	5.3688	-10.6812	
	3 rd	3.3164	2.7034	-0.2445	3.2459	-3.2090	
	4 th	3.5274	2.7849	1.8038	4.1338	3.9226	
	highest	-3.7870	-3.2632	3.5038	-11.8917	11.2615	
1991	lowest	5.2087	0.6854	6.1302	1.6043	-15.6777	
	2 nd	-2.6620	1.5243	9.6833	2.4058	-0.9121	
	3 rd	-2.2731	5.2825	10.3621	3.2322	3.1015	
	4 th	6.8904	-8.4656	-3.9207	-1.0932	5.0142	
	highest	-3.8875	4.0558	-9.5814	-6.9302	14.2548	
1992	lowest	-2.0647	-14.9738	3.5845	-16.3201	1.0887	
	2 nd	1.2960	-0.0763	3.7201	-3.8544	0.4338	
	3 rd	5.6304	8.4264	0.2865	16.9958	-1.6595	
	4 th	-4.3596	-0.4847	-4.2212	-5.4198	-7.9276	
	highest	-3.6574	1.0286	-2.0998	-1.7370	-14.4350	
1993	lowest	-0.4755	4.1036	4.9368	-14.5163	2.4777	
	2 nd	-2.2254	-10.0024	-1.0930	-2.2100	-1.6175	
	3 rd	8.7098	11.2649	-2.5881	9.0947	-3.4326	
	4 th	-1.7579	-11.0325	2.9008	-5.1957	4.5322	
	highest	-11.4036	-4.3894	3.0984	-16.4561	-4.9198	
1994	lowest	0.5169	-10.6012	-4.3020	6.9203	-20.0435	
	2 nd	4.8713	0.0543	-9.8421	0.7172	3.4651	
	3 rd	-1.0856	2.6817	-5.4576	2.1331	0.0377	
	4 th	-1.4727	5.0703	1.9461	-6.9038	4.5911	
	highest	-2.7894	-1.7750	3.2777	2.8414	-16.9990	
1995	lowest	13.7899	-15.1187	-9.4624	-6.4774	-16.1806	
	2 nd	-17.1648	-4.2495	0.1039	-14.4146	2.0518	
	3 rd	-1.2710	-4.4483	3.8440	-8.6460	-19.3191	
	4 th	7.1602	2.9389	-2.4252	7.6299	0.3511	
	highest	-5.0326	9.3315	-2.4359	15.1922	-1.1738	
1996	lowest	-0.8628	1.1683	-19.3617	-8.7875	-	
	2 nd	-0.2329	5.9534	-18.8470	-17.5134	-	
	3 rd	-11.4240	-2.9021	6.3261	-7.1788	-	
	4 th	15.5069	-2.3882	35.4561	4.7240	-	
	highest	-13.3217	4.3204	-14.4702	-5.5252	-	

**Table 7 Yearly Returns on the Characteristic-Adjusted Capital Investment Portfolio at Year 1, 2, 3, 4, and 5:
1987 to 1999**

(continue)

Formation Year		Returns in Year 1	Returns in Year 2	Returns in Year 3	Returns in Year 4	Returns in Year 5	Cumulative Returns
1997	lowest	3.0087	-31.7087	-16.5005	-	-	
	2 nd	3.0683	-21.8601	5.7861	-	-	
	3 rd	5.2349	-3.6110	10.0450	-	-	
	4 th	-2.3205	16.6699	0.2223	-	-	
	highest	-5.8817	12.0797	-0.6842	-	-	
1998	lowest	-33.7003	0.2326	-	-	-	
	2 nd	4.9926	1.6148	-	-	-	
	3 rd	23.0663	3.5210	-	-	-	
	4 th	-3.7307	-5.6981	-	-	-	
	highest	-10.5202	-2.6863	-	-	-	
1999	lowest	18.3079	-	-	-	-	
	2 nd	4.8402	-	-	-	-	
	3 rd	-4.7793	-	-	-	-	
	4 th	-3.6609	-	-	-	-	
	highest	-1.1396	-	-	-	-	
Number of positive returns/ Observations	lowest	7/13	6/12	5/11	3/10	4/9	
	2 nd	8/13	6/12	6/11	6/10	4/9	
	3 rd	6/13	8/12	7/11	7/10	4/9	
	4 th	7/13	6/12	7/11	4/10	7/9	
	highest	2/13	6/12	4/11	5/10	3/9	
Mean (t-statistics)	lowest	1.0175 (0.29)	-5.6139 (-1.73)	-2.7293 (-0.99)	-4.3685 (-1.74)	-8.5322* (-2.12)	
	2 nd	0.6157 (0.28)	-2.8793 (-1.30)	-0.8525 (-0.36)	-1.5062 (-0.57)	-1.2448 (-0.84)	
	3 rd	0.8398 (0.33)	1.8624 (0.93)	2.7618 (1.76)	2.6393 (1.07)	-1.6666 (-0.61)	
	4 th	2.1159 (1.30)	0.7873 (0.36)	3.3739 (1.01)	-0.6318 (-0.39)	1.6418 (1.00)	
	highest	-3.9454** (-2.25)	2.2176 (0.93)	-1.0567 (-0.44)	-0.7490 (-0.24)	-0.1587 (-0.04)	

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table 8 Yearly Returns on the Characteristic-Adjusted CI-Spread Portfolio at Year 1, 2, 3, 4, and 5: 1987 to 1999

(Capital Investment is scaled by Sales and defined as change rate of capital expenditure)

A. The first CI-Spread Portfolios:

Formation Year	Returns in Year 1	Returns in Year 2	Returns in Year 3	Returns in Year 4	Returns in Year 5	Cumulative Returns
1987	-8.1781	14.5263	0.8860	0.0091	-0.0106	
1988	31.1761	-6.8208	-4.4042	6.3064	2.1073	
1989	-2.2435	3.8143	-7.7268	0.8344	-24.6658	
1990	-0.0261	-1.0875	-1.3374	-15.0631	-17.6764	
1991	0.6491	4.9608	15.2536	-0.1575	-11.7293	
1992	5.8382	-7.2098	5.1746	-7.3526	12.0669	
1993	3.0207	4.6763	0.1583	4.7959	3.8659	
1994	8.7853	-11.9555	-2.8419	11.1830	-3.2172	
1995	-5.0465	-12.0607	-3.5298	-11.2387	-9.2922	
1996	-5.8204	3.8651	-33.5910	-15.0927	-	
1997	1.5226	-23.9856	-5.9329	-	-	
1998	-19.4562	1.7932	-	-	-	
1999	0.9890	-	-	-	-	
Number of positive returns/ Observations	7/13	6/12	4/11	5/10	3/9	
Mean (t-statistics)	0.8623 (0.27)	-2.4570 (-0.82)	-3.4447 (-0.97)	-2.5776 (-0.89)	-5.3946 (-1.41)	

B. The second CI-Spread Portfolios:

Formation Year	Returns in Year 1	Returns in Year 2	Returns in Year 3	Returns in Year 4	Returns in Year 5	Cumulative Returns
1987	-20.9365	21.6395	-2.7315	16.8563	-7.9510	
1988	51.8072	-11.1676	2.8390	-1.5459	1.6615	
1989	-8.8243	6.7720	-3.3444	-8.2864	-37.4431	
1990	11.2925	2.7003	-2.6897	-29.9433	-21.6934	
1991	4.8558	1.7582	20.4139	-0.1590	-12.2163	
1992	2.4115	-13.4815	7.5766	-14.9075	19.4773	
1993	8.7010	9.1297	-5.0559	21.4911	11.6782	
1994	1.5158	-17.5089	1.9775	12.3067	-11.3661	
1995	12.2837	-11.6602	-5.7200	0.8982	-18.2510	
1996	-2.4488	-5.6150	-21.2048	-11.8465	-	
1997	10.6319	-21.1903	2.1929	-	-	
1998	-25.7804	2.0353	-	-	-	
1999	0.9762	-	-	-	-	
Number of positive returns/ Observations	9/13	6/12	5/11	4/10	3/9	
Mean (t-statistics)	3.5758 (0.69)	-3.0490 (-0.84)	-0.5224 (-0.17)	-1.5136 (-0.31)	-8.4560 (-1.46)	

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table 9 Yearly Returns on the Characteristic-Adjusted CI-Spread Portfolio at Year 1, 2, 3, 4, and 5: 1987 to 1999

(Capital Investment is scaled by Sales and defined as increasing (decreasing) rate of capital expenditure)

A. The first CI-Spread Portfolios:

Formation Year	Returns in Year 1	Returns in Year 2	Returns in Year 3	Returns in Year 4	Returns in Year 5	Cumulative Returns
1987	-6.3629	-17.2490	6.8031	-2.7252	1.7800	
1988	-11.1062	2.1305	-0.8224	2.0144	3.3726	
1989	3.5601	-2.7881	-1.1008	-3.3143	-27.2953	
1990	0.7958	-5.1802	0.4905	5.8966	-16.3570	
1991	-1.7030	3.4879	14.5003	5.8062	-17.3379	
1992	7.6413	-5.3222	5.6126	-0.5528	7.4878	
1993	8.9258	8.9621	-2.6069	8.6916	2.3050	
1994	6.3316	-7.9665	-5.0052	11.0572	2.6750	
1995	0.5746	-17.5274	1.9491	-11.1110	-7.9638	
1996	-5.5836	3.9155	-28.0600	-18.5239	-	
1997	7.0188	-35.6884	-14.9867	-	-	
1998	-14.7122	1.0948	-	-	-	
1999	6.5019	-	-	-	-	
Number of positive returns/ Observations	8/13	5/12	5/11	5/10	5/9	
Mean (t-statistics)	0.1448 (0.07)	-6.0109 (-1.68)	-2.1115 (-0.62)	-0.2761 (-0.10)	-5.7037 (-1.42)	

B. The second CI-Spread Portfolios:

Formation Year	Returns in Year 1	Returns in Year 2	Returns in Year 3	Returns in Year 4	Returns in Year 5	Cumulative Returns
1987	-13.0040	-24.7421	12.8608	-4.9387	7.8027	
1988	21.7722	-2.4589	0.7534	4.1899	1.9992	
1989	-4.2682	11.3232	-0.8753	-17.7891	-48.8307	
1990	10.9706	0.5577	0.6616	5.3199	-16.0792	
1991	1.2994	-0.1253	20.5255	6.8212	-20.6676	
1992	8.4132	-6.0806	14.1791	-13.9662	17.6299	
1993	12.4408	3.7802	3.3084	4.3988	8.7120	
1994	1.7050	-5.9837	-0.4459	9.5742	3.6556	
1995	6.9151	-10.2145	-4.1902	-11.7476	2.4054	
1996	-5.5476	-5.7682	-16.9741	-17.8386	-	
1997	11.6175	-49.2222	-16.9337	-	-	
1998	-24.1578	-3.0232	-	-	-	
1999	8.6213	-	-	-	-	
Number of positive returns/ Observations	9/13	3/12	6/11	5/10	6/9	
Mean (t-statistics)	2.8290 (0.84)	-7.6631 (-1.69)	1.1700 (0.33)	-3.5976 (-1.05)	-4.8192 (-0.71)	

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table 10 Yearly Returns on the Characteristic-Adjusted CI-Spread Portfolio at Year 1, 2, 3, 4, and 5: 1987 to 1999

(Capital Investment is scaled by Total Assets and defined as change rate of capital expenditure)

A. The first CI-Spread Portfolios:

Formation Year	Returns in Year 1	Returns in Year 2	Returns in Year 3	Returns in Year 4	Returns in Year 5	Cumulative Returns
1987	-15.3665	4.3234	-2.3742	6.2489	7.2966	
1988	33.7643	-10.1929	-7.9058	8.1522	1.5056	
1989	-1.9140	7.2382	-8.7664	-0.0803	-26.1871	
1990	1.1860	-1.2160	-3.2509	-15.0962	-16.4702	
1991	-0.1668	2.8055	15.4031	1.9151	-12.0798	
1992	4.5403	-10.5284	7.4688	-11.3490	13.5321	
1993	5.7628	7.6492	-1.1034	3.9627	0.1121	
1994	5.4912	-11.5789	-5.3095	10.1495	-7.4476	
1995	-5.9412	-11.6722	-7.3026	-4.0597	-8.1909	
1996	-7.9188	4.9645	-37.4496	-14.7247	-	
1997	0.1273	-27.3165	6.4874	-	-	
1998	-10.1940	8.7942	-	-	-	
1999	3.0073	-	-	-	-	
Number of positive returns/ Observations	7/13	6/12	3/11	5/10	4/9	
Mean (t-statistics)	0.9521 (0.29)	-3.0608 (-0.95)	-4.0094 (-0.99)	-1.4881 (-0.50)	-5.3255 (-1.30)	

B. The second CI-Spread Portfolios:

Formation Year	Returns in Year 1	Returns in Year 2	Returns in Year 3	Returns in Year 4	Returns in Year 5	Cumulative Returns
1987	-33.9386	-2.3945	-5.9817	25.3253	6.1940	
1988	51.0646	-8.9823	-0.3190	0.5200	4.1705	
1989	-6.6179	11.8828	-6.3118	-6.8372	-42.0987	
1990	11.2354	0.1580	-3.4072	-30.5498	-20.6592	
1991	12.3305	-2.1050	16.6072	-3.4847	-16.5828	
1992	2.9199	-15.1242	-3.4062	-13.8871	15.6503	
1993	16.5735	10.0437	3.4339	10.0129	7.6459	
1994	2.6784	-20.0025	1.1786	11.8996	-11.0340	
1995	14.0880	-12.7735	-9.8974	4.0247	-14.9963	
1996	7.5447	-0.3736	-20.8437	-3.6784	-	
1997	11.1757	-19.5774	0.6786	-	-	
1998	-25.9045	8.9522	-	-	-	
1999	-0.0964	-	-	-	-	
Number of positive returns/ Observations	9/13	4/12	4/11	5/10	4/9	
Mean (t-statistics)	4.8503 (0.85)	-4.1914 (-1.30)	-2.5699 (-0.93)	-0.6655 (-0.14)	-7.9678 (-1.32)	

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table 11 Yearly Returns on the Characteristic-Adjusted CI-Spread Portfolio at Year 1, 2, 3, 4, and 5: 1987 to 1999

(Capital Investment is scaled by Total Assets and defined as increasing (decreasing) rate of capital expenditure)

A. The first CI-Spread Portfolios:

Formation Year	Returns in Year 1	Returns in Year 2	Returns in Year 3	Returns in Year 4	Returns in Year 5	Cumulative Returns
1987	-5.1691	-12.9239	5.6668	-4.9884	0.2671	
1988	3.7518	4.1294	-6.4517	6.0591	2.5464	
1989	-0.7613	-1.2398	-2.3731	-2.2595	-25.1155	
1990	1.7407	-3.0400	-3.0237	5.5058	-14.2672	
1991	-0.2281	3.3097	14.6578	6.0168	-17.9294	
1992	3.6242	-7.7970	6.8128	-6.5089	11.9426	
1993	5.2303	4.7616	-1.0777	2.4627	0.6239	
1994	4.8252	-6.9211	-9.6839	5.8450	-2.0853	
1995	-2.7512	-15.8193	-2.2487	-21.8570	-6.6530	
1996	-1.6405	2.5948	-29.5973	-12.7499	-	
1997	7.1396	-41.1591	-5.1262	-	-	
1998	-7.2284	5.1159	-	-	-	
1999	13.9743	-	-	-	-	
Number of positive returns/ Observations	7/13	5/12	3/11	5/10	4/9	
Mean (t-statistics)	1.7313 (1.11)	-5.7491 (-1.51)	-2.9495 (-0.87)	-2.2469 (-0.75)	-5.6300 (-1.46)	

B. The second CI-Spread Portfolios:

Formation Year	Returns in Year 1	Returns in Year 2	Returns in Year 3	Returns in Year 4	Returns in Year 5	Cumulative Returns
1987	-11.7141	-27.6393	12.9672	-7.9877	7.7634	
1988	-0.8158	11.1847	-17.9290	3.8177	5.2505	
1989	-2.5098	14.4555	-1.9036	-16.8399	-49.3827	
1990	18.1944	-3.8015	0.5461	9.7766	-13.9307	
1991	9.0962	-3.3704	15.7116	8.5345	-29.9324	
1992	1.5927	-16.0025	5.6843	-14.5832	15.5237	
1993	10.9281	8.4930	1.8384	1.9397	7.3975	
1994	3.3063	-8.8262	-7.5797	4.0789	-3.0445	
1995	18.8226	-24.4502	-7.0265	-21.6696	-15.0068	
1996	12.4589	-3.1521	-4.8915	-3.2623	-	
1997	8.8904	-43.7884	-15.8163	-	-	
1998	-23.1801	2.9190	-	-	-	
1999	19.4475	-	-	-	-	
Number of positive returns/ Observations	9/13	4/12	5/11	5/10	4/9	
Mean (t-statistics)	4.9629 (1.43)	-7.8315 (-1.56)	-1.6726 (-0.52)	-3.6195 (-1.03)	-8.3736 (-1.20)	

- * represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table 12 Yearly Returns on the Characteristic-Adjusted Capital Investment Portfolio at Different Periods: 1987 to 1999
(Capital Investment is scaled by Sales and defined as change rate of capital expenditure)

Formation Year	1987/7~ 1988/6	1988/7~ 1989/6	1989/7~ 1990/6	1990/7~ 1991/6	1991/7~ 1992/6	1992/7~ 1993/6	1993/7~ 1994/6	1994/7~ 1995/6	1995/7~ 1996/6	1996/7~ 1997/6	1997/7~ 1998/6	1998/7~ 1999/6	1999/7~ 2000/6
1987	lowest 2 nd 3 rd 4 th highest	-4.3950 -0.1900 -3.4929 -4.7703 16.5415	27.2410 -10.5455 4.3337 -17.9587 5.6015	-6.3242 9.5165 2.3743 5.0130 -3.5927	14.2289 -3.7034 -1.8173 13.1346 -2.6274	-1.5600 2.6091 -0.5039 -5.3208 6.3910							
1988	lowest 2 nd 3 rd 4 th highest		38.5061 8.3902 -13.2647 -2.1548 -13.3012	-8.2421 3.7350 0.0289 6.2090 2.9255	10.0246 -10.1193 8.7960 1.5281 7.1855	0.5918 9.6441 -2.1314 -4.5145 2.1377	1.9081 2.2869 0.2272 -0.2661 0.2465						
1989	lowest 2 nd 3 rd 4 th highest			-9.8703 6.9875 5.9646 2.6502 -1.0460	5.3384 4.1244 -2.5563 3.2677 -1.4336	-2.6789 -6.4635 2.2589 5.6458 0.6655	-18.1746 -12.6578 7.5645 -0.7694 19.2684						
1990	lowest 2 nd 3 rd 4 th highest			8.9005 -5.8400 -5.3975 5.5047 -2.3920	-1.0815 -2.0693 1.3081 2.8060 -3.7819	3.8059 -2.5947 -0.3489 -2.6095 6.4955	-21.2669 1.6633 7.1440 1.8463 8.6764	-8.2007 -7.4101 -6.1356 6.2493 13.4926					
1991	lowest 2 nd 3 rd 4 th highest				4.2727 -2.5277 -1.2148 1.0299 -0.5831	2.7432 3.0028 3.4980 -5.1606 0.9850	4.6130 12.6341 6.8642 2.5407 -15.8009	-3.7697 1.2805 2.5227 1.4365 -3.6107	-7.5370 -3.3977 5.2738 7.8445 4.6793				
1992	lowest 2 nd 3 rd 4 th highest					-2.6709 5.3237 5.6162 -3.9413 -5.0824	-12.1823 4.1827 1.2150 5.1208 1.2992	1.7415 5.7891 -2.9840 3.0165 -5.8351	-13.3482 -5.4970 20.7489 -5.6993 1.5593	0.2838 3.4298 -4.1561 -1.2266 -19.1936			
1993	lowest 2 nd 3 rd 4 th highest						-2.3928 -1.8153 8.7538 0.8443 -11.0938	2.2096 -3.9995 8.8943 -4.2225 -6.9201	-2.5959 5.7423 -1.8372 0.3698 2.4600	-2.9882 -8.2481 5.8855 3.6512 -24.4794	9.0606 -4.0705 -2.5070 -0.1241 -2.6176		

Table 12 Yearly Returns on the Characteristic-Adjusted Capital Investment Portfolio at Different Calendar Years: 1987 to 1999
(Continue)

Formation Year	1987/7~ 1988/6	1988/7~ 1989/6	1989/7~ 1990/6	1990/7~ 1991/6	1991/7~ 1992/6	1992/7~ 1993/6	1993/7~ 1994/6	1994/7~ 1995/6	1995/7~ 1996/6	1996/7~ 1997/6	1997/7~ 1998/6	1998/7~ 1999/6	1999/7~ 2000/6
1994	lowest 2 nd 3 rd 4 th highest							1.0297 6.4769 2.6430 -9.5780 -0.4861	-15.3226 0.4390 1.3361 6.8410 2.1863	-0.6374 -10.0950 -0.4450 -2.4337 -2.6149	6.2361 6.8053 -1.3275 -3.2540 -6.0706	-21.2872 -2.4823 10.0815 -7.4139 -9.9211	
1995	lowest 2 nd 3 rd 4 th highest								9.3640 -14.0835 -3.5166 8.2932 -2.9197	-8.1017 -6.7415 -7.0945 5.7196 3.5584	-9.1838 -2.2265 6.2985 -0.8869 -3.4637	6.1319 -14.6846 -10.5268 8.6910 5.2338	-16.5313 -4.0119 -16.1078 -3.6785 1.7197
1996	lowest 2 nd 3 rd 4 th highest									-3.3571 -4.7951 1.2872 4.3969 -0.9083	-4.8894 12.3440 -3.3726 -1.0013 0.7257	-14.7723 -21.5798 12.1906 24.3975 6.4325	-12.1068 -12.9200 -9.6654 5.4190 -0.2603
1997	lowest 2 nd 3 rd 4 th highest										3.2144 -3.7270 1.7520 3.8597 -7.4175	-11.9678 -21.7765 1.7311 5.0044 9.2226	-7.0175 -3.1123 1.2150 10.9464 -9.2103
1998	lowest 2 nd 3 rd 4 th highest											-29.3525 3.3936 -4.3164 16.5256 -3.5721	2.7947 0.8638 -2.0451 -0.6872 0.7594
1999	lowest 2 nd 3 rd 4 th highest												1.4724 -0.1645 0.1764 -1.1664 0.4962
Average return (t-statistics)	lowest 2 nd 3 rd 4 th highest	4.3950 -0.1900 -3.4929 -4.7703 16.5415	32.8735 (5.84) -1.0777 (-0.11) -4.4655 (-0.51) -10.0568 (-1.27) -3.8498 (-0.41)	-8.1455* (-7.95) 6.7463* (4.03) 2.7892 (1.62) 4.6241** (4.42) -0.5711 (-0.30)	9.6231* (5.25) -3.8846 (-1.30) -0.2438 (-0.08) 5.8588 (2.29) 0.1831 (0.08)	-0.0912 (-0.08) 0.2385 (0.086) -0.0566 (-0.07) -0.0707 (-0.03) 0.9659 (0.58)	0.9449 (0.78) 1.4712 (1.05) 3.2168* (2.21) -4.5190* (-2.62) 1.9739 (0.875)	-9.8807 (-2.04) 0.8014 (0.19) 6.3083*** (4.80) 1.9165 (1.96) 0.4699 (0.07)	-1.3979 (-0.70) 0.4274 (0.16) 0.9881 (0.38) -0.6197 (-0.22) -0.6719 (-0.18)	-5.8879 (-1.33) -3.3594 (-1.02) 4.4010 (1.01) 3.5299 (1.30) 1.5930 (1.28)	0.8876 (0.26) 1.8251 (0.55) 0.1687 (0.10) -0.2813 (-0.24) -3.7688* (-2.66)	-14.2496* (-2.41) -11.4259* (-2.24) 1.8320 (0.43) 9.4409 (1.76) 1.4791 (0.41)	-6.2777 (-1.67) -3.8690 (-1.59) -5.2854 (-1.60) 2.1667 (0.82) -1.2991 (-0.65)

Table 13 Yearly Returns on the Characteristic-Adjusted Capital Investment Portfolio at Different Periods: 1987 to 1999

(Capital Investment is scaled by Sales and defined as increasing (decreasing) rate of capital expenditure)

Formation Year	1987/7~ 1988/6	1988/7~ 1989/6	1989/7~ 1990/6	1990/7~ 1991/6	1991/7~ 1992/6	1992/7~ 1993/6	1993/7~ 1994/6	1994/7~ 1995/6	1995/7~ 1996/6	1996/7~ 1997/6	1997/7~ 1998/6	1998/7~ 1999/6	1999/7~ 2000/6
1987	lowest 2 nd 3 rd 4 th highest	-0.0075 1.2949 -8.4137 1.0168 12.9964	-5.8962 -3.1852 -7.6557 6.5707 18.8459	7.5137 0.7611 3.7589 0.0157 -5.3470	0.5005 2.9744 4.3142 5.5021 -4.5806	3.2221 1.2595 -4.9116 5.5021 -4.5806							
1988	lowest 2 nd 3 rd 4 th highest	-0.0075 1.2949 -8.4137 1.0168 12.9964	-0.0075 1.2949 -8.4137 1.0168 12.9964	-5.8962 -3.1852 -7.6557 6.5707 18.8459	7.5137 0.7611 3.7589 0.0157 -5.3470	0.5005 2.9744 4.3142 5.5021 -4.5806							
1989	lowest 2 nd 3 rd 4 th highest			-7.1756 14.7399 -1.3152 3.3515 -2.9074	6.5257 -4.0537 -2.1277 12.8457 -4.7975	-4.3585 3.6277 0.3519 4.9541 -3.4832	-29.0619 -4.9145 6.0133 0.8454 19.7688						
1990	lowest 2 nd 3 rd 4 th highest			6.4598 -3.4237 -0.4329 5.9553 -4.5109	-4.6751 2.2496 -3.6172 13.1677 -5.2328	6.0520 -6.2804 4.6572 -6.5999 5.3904	-2.7919 1.0348 10.7319 -5.4384 -8.1118	-3.8497 -14.1474 0.8449 2.4873 12.2295					
1991	lowest 2 nd 3 rd 4 th highest				2.1833 -3.5336 -0.1327 1.1718 0.8839	0.8049 2.5448 5.2606 -4.5563 0.9302	5.4687 9.4452 10.5902 0.9702 -15.0569	0.9587 3.4024 1.3218 -1.3888 -5.8625	-15.7621 -1.0734 3.7421 12.9348 4.9054				
1992	lowest 2 nd 3 rd 4 th highest					4.2203 2.8207 1.4337 -4.0486 -4.1929	-4.8041 2.1832 -2.0142 6.7471 1.2765	9.5257 2.5750 -9.6476 5.5289 -4.6534	-13.3378 6.2949 17.7942 -6.5657 0.6284	0.8879 -4.2899 -0.7740 -1.6355 -16.7420			
1993	lowest 2 nd 3 rd 4 th highest						0.7501 5.2999 3.4286 -0.1109 -11.6907	-0.5752 3.8018 6.9243 -10.3421 -4.3554	7.2980 -8.4684 1.7141 0.0538 3.9896	-12.3470 7.0919 4.7690 -5.8925 -16.7458	3.5536 0.2347 -5.1397 4.3366 -5.1584		

Table 13 Yearly Returns on the Characteristic-Adjusted Capital Investment Portfolio at Different Calendar Years: 1987 to 1999
(Continue)

Formation Year	1987/7~ 1988/6	1988/7~ 1989/6	1989/7~ 1990/6	1990/7~ 1991/6	1991/7~ 1992/6	1992/7~ 1993/6	1993/7~ 1994/6	1994/7~ 1995/6	1995/7~ 1996/6	1996/7~ 1997/6	1997/7~ 1998/6	1998/7~ 1999/6	1999/7~ 2000/6	
1994	lowest 2 nd 3 rd 4 th highest							-0.1876 4.0943 4.6267 -6.8638 -1.8926	-10.2772 0.2856 -0.2770 10.2351 -4.2935	-2.4971 -11.1680 3.4966 -1.6034 -2.0512	9.9950 3.7942 -1.8838 -8.7459 0.4208	-20.4589 2.0373 9.3218 0.3428 -24.1145		
1995	lowest 2 nd 3 rd 4 th highest								9.6028 -8.1829 -2.0933 -2.4171 2.6878	-12.6232 -10.9786 -0.5759 13.8617 -2.4087	-12.4113 7.0925 7.1985 -0.9960 -8.2211	-7.6983 6.0341 -22.5563 16.5085 4.0493	-16.4198 -11.6042 -11.8202 6.7289 -18.8252	
1996	lowest 2 nd 3 rd 4 th highest									-6.0195 5.5695 -6.3770 11.1892 -0.4719	-3.3270 10.8836 -3.9865 -2.7156 2.4412	-15.9931 -11.3402 11.7103 27.8057 0.9810	-9.8319 -15.8337 -10.9437 3.3754 8.0067	
1997	lowest 2 nd 3 rd 4 th highest										2.9270 4.6216 2.0800 2.2015 -8.6905	-33.5380 -15.7106 0.5978 6.4441 15.6842	-17.0037 -5.0874 1.9498 7.9523 -0.0701	
1998	lowest 2 nd 3 rd 4 th highest											-27.9834 0.5109 11.0379 5.7776 -3.8256	-0.0218 -4.5349 8.5783 -9.7476 3.0014	
1999	lowest 2 nd 3 rd 4 th highest												12.9857 0.0624 -1.1883 -4.3202 4.3645	
Average return (t-statistics)	lowest 2 nd 3 rd 4 th highest	-0.0075 1.2949 -8.4137 1.0168 12.9964	1.2351 (0.17) -5.9878 (-2.14) -5.8020 (-3.13) 20.8824 (1.46) 2.7201 (0.17)	-0.9885 (-0.22) 6.4616 (1.53) 2.8837 (1.30) 0.1770 (0.10) -3.0330* (-2.33)	4.9321* (3.34) -0.7866 (-0.45) 0.8041 (0.58) 6.5104 (2.98) 0.4049 (0.14)	0.6535 (0.29) 0.4233 (0.33) -1.9564 (-1.94) 4.6940 (1.91) -1.9414 (-1.23)	0.5735 (0.23) 1.7630 (0.83) 3.2915 (1.96) -4.2763 (-2.68) 1.9416 (0.78)	-6.0878 (-1.01) 2.6097 (1.10) 5.7500* (2.41) 0.6027 (0.31) -2.7628 (-0.44)	1.1744 (0.53) -0.0548 (-0.02) 0.8140 (0.29) -2.1157 (-0.72) -0.9069 (-0.27)	-4.4952 (-0.84) -2.2288 (-0.80) 4.1760 (1.18) 2.8482 (0.76) 1.5835 (0.97)	-6.5198* (-2.44) -2.7550 (-0.70) 0.1077 (0.06) 3.1839 (0.81) -7.6839** (-2.07)	0.1475 (0.04) 5.3253** (3.01) -0.3463 (-0.15) -1.1839 (-0.53) -3.8416* (-1.70)	-21.1343*** (-4.68) -3.6937 (-0.89) 2.0223 (0.31) 11.3757 (2.34) -1.4451 (-0.22)	-6.0583 (-1.07) -7.3996* (-2.63) -2.6848 (-0.69) 0.7978 (0.24) -0.7046 (-0.15)

Table 14 Yearly Returns on the Characteristic-Adjusted Capital Investment Portfolio at Different Periods: 1987 to 1999

(Capital Investment is scaled by Total Assets and defined as change rate of capital expenditure)

Formation Year	1987/7~ 1988/6	1988/7~ 1989/6	1989/7~ 1990/6	1990/7~ 1991/6	1991/7~ 1992/6	1992/7~ 1993/6	1993/7~ 1994/6	1994/7~ 1995/6	1995/7~ 1996/6	1996/7~ 1997/6	1997/7~ 1998/6	1998/7~ 1999/6	1999/7~ 2000/6
1987	lowest 2 nd 3 rd 4 th highest	-15.1491 -0.3591 -4.8177 -3.5647 18.7895	13.8335 -8.2154 3.1764 -19.2566 16.2280	-9.4321 8.2117 2.6169 6.9784 -3.4504	23.1145 0.0647 -4.9358 12.8922 -2.2108	6.6338 2.5725 -0.9439 -5.8267 0.4398							
1988	lowest 2 nd 3 rd 4 th highest		36.1452 7.2039 11.4926 -9.2601 -14.9194	-5.3637 -4.4846 -0.3203 6.9190 3.6186	7.9919 -12.1162 6.7871 3.3763 8.3109	-0.4527 11.7968 2.6056 -3.9876 -0.9727	3.1444 0.0601 0.3115 1.2194 -1.0261						
1989	lowest 2 nd 3 rd 4 th highest			-11.1022 8.0223 8.2949 5.2325 -4.4844	5.8744 6.5633 -2.7158 3.9695 -6.0084	-3.0057 -6.4944 0.9892 4.7267 3.3060	-18.4548 -10.0944 4.5604 0.1811 23.6440						
1990	lowest 2 nd 3 rd 4 th highest				8.7502 -6.1936 -3.6769 2.6697 -2.4852	-3.3754 -0.1153 1.7843 2.4746 -3.5334	-22.2105 4.0839 4.4489 3.7265 8.3393	-6.9816 -6.9620 -8.1070 5.3191 13.6776					
1991	lowest 2 nd 3 rd 4 th highest				4.2368 -0.5801 -1.6939 12.0838 -8.0936	1.6482 1.4262 2.3962 -6.2898 3.7532	5.3441 14.3057 5.4442 0.1065 -11.2630	-3.1669 1.8426 3.5593 -5.4722 0.3177	-7.4523 -2.2901 2.9053 5.2868 9.1304				
1992	lowest 2 nd 3 rd 4 th highest					-1.3592 2.1158 5.6221 -4.0448 -4.2791	-15.1084 -2.6486 8.4511 3.2841 0.0157	-0.9751 12.2269 -2.3645 -6.1170 2.4311	-14.3979 -9.3299 16.5715 -0.5189 -0.5108	-1.5524 3.0680 1.2266 -8.3460 -17.2027		2.3483 -1.5962 -3.8685 5.8254 -5.2976	
1993	lowest 2 nd 3 rd 4 th highest						3.5910 -6.4015 9.3991 -1.3535 -12.9824	3.0161 -5.6095 10.5947 -10.8642 -7.0276	5.9099 -2.5994 -2.0340 3.0413 2.4761	-8.9446 -5.9864 7.8278 -3.8989 -18.9575			

Table 14 Yearly Returns on the Characteristic-Adjusted Capital Investment Portfolio at Different Calendar Years: 1987 to 1999

(Continue)

Formation Year	1987/7~ 1988/6	1988/7~ 1989/6	1989/7~ 1990/6	1990/7~ 1991/6	1991/7~ 1992/6	1992/7~ 1993/6	1993/7~ 1994/6	1994/7~ 1995/6	1995/7~ 1996/6	1996/7~ 1997/6	1997/7~ 1998/6	1998/7~ 1999/6	1999/7~ 2000/6
1994	lowest 2 nd 3 rd 4 th highest							0.6992 4.0359 2.7526 -4.2682 -1.9792	-15.7686 0.9782 1.4089 4.1335 4.2338	-0.3929 -10.6723 -4.3724 1.1252 -1.5716	5.8537 4.8123 1.9605 -3.5871 -6.0459	-21.7221 0.2406 1.8613 4.1018 -10.6881	
1995	lowest 2 nd 3 rd 4 th highest								9.9961 -14.5709 -4.5085 11.3995 -4.0919	-8.9776 6.6961 -5.0827 3.8748 3.7959	-9.7759 -6.4673 5.3004 -1.7596 0.1215	8.0693 -2.0052 -18.3828 10.1388 4.0446	-15.4581 -2.8330 -18.6253 -1.4474 -0.4619
1996	lowest 2 nd 3 rd 4 th highest									1.7000 -11.2038 -4.6588 12.1786 -5.8447	-1.4962 9.4996 -0.7704 -0.8031 -1.1225	-17.9819 -22.3751 2.6800 31.6803 2.8618	-1.5420 -22.4930 -11.7564 3.2780 2.1364
1997	lowest 2 nd 3 rd 4 th highest										3.3967 -9.8584 8.8464 1.0628 -7.7790	-13.2120 -19.6314 -6.6884 15.4242 6.3654	-6.0776 15.0053 5.5653 2.7091 -6.7562
1998	lowest 2 nd 3 rd 4 th highest											-30.6358 2.9004 21.0936 -2.6162 -4.7313	1.9494 3.3594 5.7776 -5.2769 -7.0029
1999	lowest 2 nd 3 rd 4 th highest												5.0814 3.5384 -3.2472 -2.5726 5.1778
Average return (t-statistics)	lowest 2 nd 3 rd 4 th highest	-15.1491 -0.3591 -4.8177 -3.5647 18.7895	24.9893 (2.24) -0.5058 (-0.07) 7.3345 (1.76) -14.2583 (-2.85) 0.6543 (0.04)	-8.6327** (-5.07) 3.9165 (0.93) 3.5305 (1.40) 6.3766*** (11.14) -1.4387 (-0.57)	11.4328* (2.90) -2.9205 (-0.73) -1.1353 (-0.42) 5.7269* (2.38) -0.5983 (-0.19)	0.8074 (0.41) 1.4359 (0.48) 0.5483 (0.67) 1.8942 (0.59) -1.7708 (-0.92)	1.1756 (1.27) -0.1295 (-0.14) 2.7305 (1.66) -3.3894 (-1.96) 2.2274 (1.05)	-9.3677 (-1.62) -0.1510 (-0.04) 6.4608*** (6.26) 1.1889 (1.20) 1.5507 (0.23)	-1.4817 (-0.87) 1.1068 (0.32) 1.2870 (0.41) -4.2805 (-1.62) 1.4839 (0.43)	-4.3426 (-0.83) -5.5624 (-1.98) 2.8686 (0.78) 4.6684* (2.40) 2.2475 (1.01)	0.0653 (0.02) -0.7220 (-0.20) 2.2937 (1.03) 0.1477 (0.09) -4.0247* (-2.67)	-15.0965* (-2.34) -8.1741 (-1.54) 0.1128 (0.02) 11.7458 (2.02) -0.4295 (-0.14)	-3.2094 (-0.90) -0.6846 (-0.11) -4.4572 (-0.93) -0.6619 (-0.41) -1.3814 (-0.57)

Table 15 Yearly Returns on the Characteristic-Adjusted Capital Investment Portfolio at Different Periods: 1987 to 1999

(Capital Investment is scaled by Total Assets and defined as increasing (decreasing) rate of capital expenditure)

Formation Year	1987/7~ 1988/6	1988/7~ 1989/6	1989/7~ 1990/6	1990/7~ 1991/6	1991/7~ 1992/6	1992/7~ 1993/6	1993/7~ 1994/6	1994/7~ 1995/6	1995/7~ 1996/6	1996/7~ 1997/6	1997/7~ 1998/6	1998/7~ 1999/6	1999/7~ 2000/6
1987	lowest 2 nd 3 rd 4 th highest	-0.6076 2.0204 -8.2952 0.6446 11.1065	-7.1218 4.9910 -13.8064 3.1996 20.5175	6.7826 -0.7817 6.3736 0.8519 -6.1846	-1.5335 0.9435 8.2697 2.9325 6.5107	3.7624 -0.7184 -4.1487 6.5107 -4.0010							
1988	lowest 2 nd 3 rd 4 th highest		2.3900 14.0528 -8.9368 5.7333 3.2058	5.8861 -4.8467 7.4289 -1.9209 -5.2986	-1.6367 3.0516 3.4350 -1.9740 16.2923	5.8949 6.1726 -3.7426 -2.1279 2.0772	0.2606 2.4226 1.6573 2.5802 -4.9899						
1989	lowest 2 nd 3 rd 4 th highest			-6.6912 6.3333 3.0251 5.3462 -4.1814	7.1455 -8.1606 5.8083 8.7745 -7.3101	-4.2433 3.6305 -2.0018 6.4732 -2.3398	-29.8085 -5.6470 11.9730 -4.7987 19.5742						
1990	lowest 2 nd 3 rd 4 th highest			14.4074 -11.1855 3.3164 3.5274 -3.7870	-7.0647 0.5063 2.7034 2.7849 -3.2632	4.0499 -4.7896 -0.2445 1.8038 3.5038	-2.1151 5.3688 3.2459 4.1338 -11.8917	-2.6692 -10.6812 -3.2090 3.9226 11.2615					
1991	lowest 2 nd 3 rd 4 th highest				5.2087 -2.6620 -2.2731 6.8904 -3.8875	0.6854 1.5243 5.2825 -8.4656 4.0558	6.1302 9.6833 10.3621 -3.9207 -9.5814	1.6043 2.4058 3.2322 -1.0932 -6.9302	-15.6777 -0.9121 3.1015 5.0142 14.2548				
1992	lowest 2 nd 3 rd 4 th highest					-2.0647 1.2960 5.6304 -4.3596 -3.6574	-14.9738 -0.0763 8.4264 -0.4847 1.0286	3.5845 3.7201 0.2865 -4.2212 -2.0998	-16.3201 -3.8544 16.9958 -5.4198 -1.7370	1.0887 0.4338 -1.6595 -7.9276 -14.4350			
1993	lowest 2 nd 3 rd 4 th highest						-0.4755 -2.2254 8.7098 -1.7579 -11.4036	4.1036 -10.0024 11.2649 -11.0325 -4.3894	4.9368 -1.0930 -2.5881 2.9008 3.0984	-14.5163 -2.2100 9.0947 -5.1957 -16.4561	2.4777 -1.6175 -3.4326 4.5322 -4.9198		

Table 15 Yearly Returns on the Characteristic-Adjusted Capital Investment Portfolio at Different Calendar Years: 1987 to 1999

(Continue)

Formation Year	1987/7~ 1988/6	1988/7~ 1989/6	1989/7~ 1990/6	1990/7~ 1991/6	1991/7~ 1992/6	1992/7~ 1993/6	1993/7~ 1994/6	1994/7~ 1995/6	1995/7~ 1996/6	1996/7~ 1997/6	1997/7~ 1998/6	1998/7~ 1999/6	1999/7~ 2000/6
1994	lowest 2 nd 3 rd 4 th highest							0.5169 4.8713 -1.0856 -1.4727 -2.7894	-10.6012 0.0543 2.6817 5.0703 -1.7750	-4.3020 -9.8421 -5.4576 1.9461 3.2777	6.9203 0.7172 2.1331 -6.9038 2.8414	-20.0435 3.4651 0.0377 4.5911 -16.9990	
1995	lowest 2 nd 3 rd 4 th highest								13.7899 -17.1648 -1.2710 7.1602 -5.0326	-15.1187 -4.2495 -4.4483 2.9389 9.3315	-9.4624 0.1039 3.8440 -2.4252 -2.4359	-6.4774 -14.4146 -8.6460 7.6299 15.1922	-16.1806 2.0518 -19.3191 0.3511 -1.1738
1996	lowest 2 nd 3 rd 4 th highest									-0.8628 -0.2329 -11.4240 15.5069 -13.3217	1.1683 5.9534 -2.9021 -2.3882 4.3204	-19.3617 -18.8470 6.3261 35.4561 -14.4702	-8.7875 -17.5134 -7.1788 4.7240 -5.5252
1997	lowest 2 nd 3 rd 4 th highest										3.0087 3.0683 5.2349 -2.3205 -5.8817	-31.7087 -21.8601 -3.6110 16.6699 12.0797	-16.5005 5.7861 10.0450 0.2223 -0.6842
1998	lowest 2 nd 3 rd 4 th highest											-33.7003 4.9926 23.0663 -3.7307 -10.5202	0.2326 1.6148 3.5210 -5.6981 -2.6863
1999	lowest 2 nd 3 rd 4 th highest												18.3079 4.8402 -4.7793 -3.6609 -1.1396
Average return (t-statistics)	lowest 2 nd 3 rd 4 th highest	-0.6076 2.0204 -8.2952 0.6446 11.1065	-2.3659 (-0.50) 9.5219 (2.10) -11.3716 (-4.67) 4.4664 (3.53) 11.8617 (1.37)	1.9925 (0.46) 0.2350 (0.07) 5.6092* (4.23) 1.4257 (0.67) -5.2215** (-9.01)	4.5957 (1.19) -3.8378 (-1.11) 5.2073** (4.45) 3.3151 (1.51) 2.9124 (0.55)	0.7116 (0.27) 1.3858 (0.88) -1.8925 (-1.55) 4.1062* (2.38) -2.2829 (-2.02)	-1.0847 (-0.53) 1.5552 (0.81) 3.0629* (2.77) -2.6879 (-1.27) 1.4796 (0.58)	-8.2485 (-1.29) 1.4207 (0.52) 8.5435*** (5.81) -1.3657 (-0.87) -2.4548 (-0.41)	1.4280 (1.18) -1.9373 (-0.56) 2.0978 (0.83) -2.7794 (-1.14) -0.9895 (-0.31)	-4.7745 (-0.79) -4.5940 (-1.43) 3.7840 (1.09) 2.9451 (1.34) 1.7617 (0.52)	0.8225 (0.30) 1.6451 (1.25) 0.9755 (0.55) -1.9011 (-1.04) -1.2151 (-0.59)	-22.2583** (-4.53) -9.3328 (-1.65) 3.4346 (0.63) 12.1233 (1.81) -2.9435 (-0.43)	-4.5856 (-0.71) -0.6441 (-0.15) -3.5423 (-0.71) -0.8123 (-0.45) -2.2418* (-2.53)

Table 16 Yearly Returns on the Characteristic-Adjusted CI-Spread Portfolio at Different Periods: 1987 to 1999
(Capital Investment is scaled by Sales and defined as change rate of capital expenditure)

A. The first CI-spread portfolio:

Formation Year	1987/7~1988/6	1988/7~1989/6	1989/7~1990/6	1990/7~1991/6	1991/7~1992/6	1992/7~1993/6	1993/7~1994/6	1994/7~1995/6	1995/7~1996/6	1996/7~1997/6	1997/7~1998/6	1998/7~1999/6	1999/7~2000/6
1987	-8.1781	14.5263	0.8860	0.0091	-0.0106								
1988		31.1761	-6.8208	-4.4042	6.3064	2.1073							
1989			-2.2435	3.8143	-7.7268	0.8344	-24.6658						
1990				-0.0261	-1.0875	-1.3374	-15.0631	-17.6764					
1991					0.6491	4.9608	15.2536	-0.1575	-11.7293				
1992						5.8382	-7.2098	5.1746	-7.3526	12.0669			
1993							3.0207	4.6763	0.1583	4.7959	3.8659		
1994								8.7853	-11.9555	-2.8419	11.1830	-3.2172	
1995									-5.0465	-12.0607	-3.5298	-11.2387	-9.2922
1996										-5.8204	3.8651	-33.5910	-15.0927
1997											1.5226	-23.9856	-5.9329
1998												-19.4562	1.7932
1999													0.9890
Average return (t-statistics)	-8.1781	22.8512 (2.74)	-2.7261 (-1.22)	-0.1517 (-0.09)	-0.3739 (-0.17)	2.4806 (1.88)	-5.73286 (-0.825)	0.1604 (0.03)	-7.1851** (-3.18)	-0.7720 (-0.18)	3.3814 (1.43)	-18.2978** (-3.51)	-5.5071 (-1.73)

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table 16 Yearly Returns on the Characteristic-Adjusted CI-Spread Portfolio at Different Calendar Years: 1987 to 1999
(Continue)

B. The second CI-spread portfolio:

Formation Year	1987/7~ 1988/6	1988/7~ 1989/6	1989/7~ 1990/6	1990/7~ 1991/6	1991/7~ 1992/6	1992/7~ 1993/6	1993/7~ 1994/6	1994/7~ 1995/6	1995/7~ 1996/6	1996/7~ 1997/6	1997/7~ 1998/6	1998/7~ 1999/6	1999/7~ 2000/6
1987	-20.9365	21.6395	-2.7315	16.8563	-7.9510								
1988		51.8072	-11.1676	2.8390	-1.5459	1.6615							
1989			-8.8243	6.7720	-3.3444	-8.2864	-37.4431						
1990				11.2925	2.7003	-2.6897	-29.9433	-21.6934					
1991					4.8558	1.7582	20.4139	-0.1590	-12.2163				
1992						2.4115	-13.4815	7.5766	-14.9075	19.4773			
1993							8.7010	9.1297	-5.0559	21.4911	11.6782		
1994								1.5158	-17.5089	1.9775	12.3067	-11.3661	
1995									12.2837	-11.6602	-5.7200	0.8982	-18.2510
1996										-2.4488	-5.6150	-21.2048	-11.8465
1997											10.6319	-21.1903	2.1929
1998												-25.7804	2.0353
1999													0.9762
Average return (t-statistics)	-20.9365	36.7234 (2.43)	-7.5744* (-3.01)	9.4400* (3.13)	-1.0570 (-0.47)	-1.0290 (-0.51)	-10.3506 (-0.94)	-0.7261 (-0.13)	-7.4810 (-1.40)	5.7674 (0.90)	4.6564 (1.10)	-15.7287** (-3.29)	-4.9786 (-1.17)

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table 17 Yearly Returns on the Characteristic-Adjusted CI-Spread Portfolio at Different Periods: 1987 to 1999

(Capital Investment is scaled by Sales and defined as increasing (decreasing) rate of capital expenditure)

A. The first CI-spread portfolio:

Formation Year	1987/7~ 1988/6	1988/7~ 1989/6	1989/7~ 1990/6	1990/7~ 1991/6	1991/7~ 1992/6	1992/7~ 1993/6	1993/7~ 1994/6	1994/7~ 1995/6	1995/7~ 1996/6	1996/7~ 1997/6	1997/7~ 1998/6	1998/7~ 1999/6	1999/7~ 2000/6
1987	-6.3629	-17.2490	6.8031	-2.7252	1.7800								
1988		-11.1062	2.1305	-0.8224	2.0144	3.3726							
1989			3.5601	-2.7881	-1.1008	-3.3143	-27.2953						
1990				0.7958	-5.1802	0.4905	5.8966						
1991					-1.7030	3.4879	14.5003	-16.3570	-17.3379				
1992						7.6413	-5.3222	5.8062	-0.5528	7.4878			
1993							8.9258	5.6126	-2.6069	8.6916	2.3050		
1994								8.9621	-7.9665	-5.0052	11.0572	2.6750	
1995								6.3316	0.5746	-17.5274	1.9491	-11.1110	-7.9638
1996										-5.5836	3.9155	-28.0600	-18.5239
1997											7.0188	-35.6884	-14.9867
1998												-14.7122	1.0948
1999													6.5019
Average return (t-statistics)	-6.3629	-14.1776 (-4.62)	4.1646* (3.01)	-1.3849 (-1.61)	-0.8379 (-0.64)	2.3356 (1.29)	-0.6590 (-0.09)	2.0711 (0.45)	-5.5779 (-1.70)	-2.3874 (-0.49)	5.2491** (3.08)	-17.3793* (-2.59)	-6.7755 (-1.44)

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table 16 Yearly Returns on the Characteristic-Adjusted CI-Spread Portfolio at Different Calendar Years: 1987 to 1999
(Continue)

B. The second CI-spread portfolio:

Formation Year	1987/7~ 1988/6	1988/7~ 1989/6	1989/7~ 1990/6	1990/7~ 1991/6	1991/7~ 1992/6	1992/7~ 1993/6	1993/7~ 1994/6	1994/7~ 1995/6	1995/7~ 1996/6	1996/7~ 1997/6	1997/7~ 1998/6	1998/7~ 1999/6	1999/7~ 2000/6
1987	-13.0040	-24.7421	12.8608	-4.9387	7.8027								
1988		21.7722	-2.4589	0.7534	4.1899	1.9992							
1989			-4.2682	11.3232	-0.8753	-17.7891	-48.8307						
1990				10.9706	0.5577	0.6616	5.3199	-16.0792					
1991					1.2994	-0.1253	20.5255	6.8212	-20.6676				
1992						8.4132	-6.0806	14.1791	-13.9662	17.6299			
1993							12.4408	3.7802	3.3084	4.3988	8.7120		
1994								1.7050	-5.9837	-0.4459	9.5742	3.6556	
1995									6.9151	-10.2145	-4.1902	-11.7476	2.4054
1996										-5.5476	-5.7682	-16.9741	-17.8386
1997											11.6175	-49.2222	-16.9337
1998												-24.1578	-3.0232
1999													8.6213
Average return (t-statistics)	-13.0040	-1.4850 (-0.06)	2.0445 (0.38)	4.5271 (1.13)	2.5949 (1.68)	-1.3681 (-0.31)	-3.3250 (-0.27)	2.0813 (0.42)	-6.0788 (-1.18)	1.1642 (0.24)	3.9891 (1.08)	-19.6892* (-2.27)	5.3538 (-1.02)

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table 18 Yearly Returns on the Characteristic-Adjusted CI-Spread Portfolio at Different Periods: 1987 to 1999
(Capital Investment is scaled by Total Assets and defined as change rate of capital expenditure)

A. The first CI-spread portfolio:

Formation Year	1987/7~1988/6	1988/7~1989/6	1989/7~1990/6	1990/7~1991/6	1991/7~1992/6	1992/7~1993/6	1993/7~1994/6	1994/7~1995/6	1995/7~1996/6	1996/7~1997/6	1997/7~1998/6	1998/7~1999/6	1999/7~2000/6
1987	-15.3665	4.3234	-2.3742	6.2489	7.2966								
1988		33.7643	-10.1929	-7.9058	8.1522	1.5056							
1989			-1.9140	7.2382	-8.7664	-0.0803	-26.1871						
1990				1.1860	-1.2160	-3.2509	-15.0962	-16.4702					
1991					-0.1668	2.8055	15.4031	1.9151	-12.0798				
1992						4.5403	-10.5284	7.4688	-11.3490	13.5321			
1993							5.7628	7.6492	-1.1034	3.9627	0.1121		
1994								5.4912	-11.5789	-5.3095	10.1495	-7.4476	
1995									-5.9412	-11.6722	-7.3026	-4.0597	-8.1909
1996										-7.9188	4.9645	-37.4496	-14.7247
1997											0.1273	-27.3165	6.4874
1998												-10.1940	8.7942
1999													3.0073
Average return (t-statistics)	-15.3665	19.0438 (1.29)	-4.8271 (-1.80)	1.6918 (0.49)	1.0599 (0.34)	1.1040 (0.83)	-6.1292 (-0.82)	1.2108 (0.27)	-8.4105** (-3.93)	-1.4811 (-0.33)	1.6102 (0.56)	-17.2935* (-2.69)	-0.9253 (-0.20)

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table 16 Yearly Returns on the Characteristic-Adjusted CI-Spread Portfolio at Different Calendar Years: 1987 to 1999
(Continue)

B. The second CI-spread portfolio:

Formation Year	1987/7~ 1988/6	1988/7~ 1989/6	1989/7~ 1990/6	1990/7~ 1991/6	1991/7~ 1992/6	1992/7~ 1993/6	1993/7~ 1994/6	1994/7~ 1995/6	1995/7~ 1996/6	1996/7~ 1997/6	1997/7~ 1998/6	1998/7~ 1999/6	1999/7~ 2000/6
1987	-33.9386	-2.3945	-5.9817	25.3253	6.1940	4.1705							
1988		51.0646	-8.9823	-0.3190	0.5200	-6.8372	-42.0987						
1989			-6.6179	11.8828	-6.3118	-3.4072	-30.5498						
1990				11.2354	0.1580	-2.1050	16.6072	-20.6592	-16.5828				
1991					12.3305	2.9199	-15.1242	-3.4847	-13.8871	15.6503			
1992							16.5735	10.0437	3.4339	10.0129	7.6459		
1993								2.6784	-20.0025	1.1786	11.8996	-11.0340	
1994									14.0880	-12.7735	-9.8974	4.0247	-14.9963
1995										7.5447	-0.3736	-20.8437	-3.6784
1996											11.1757	-19.5774	0.6786
1997												-25.9045	8.9522
1998													-0.0964
1999													
Average return (t-statistics)	-33.9386	24.3350 (0.91)	-7.1939* (-7.88)	12.0311 (2.29)	2.5781 (0.82)	-1.0518 (-0.52)	-10.9184 (-0.91)	-2.9656 (-0.58)	-6.5901 (-1.00)	4.3226 (0.89)	4.0900 (0.99)	-14.6670** (-2.79)	-1.8280 (-0.47)

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table 19 Yearly Returns on the Characteristic-Adjusted CI-Spread Portfolio at Different Periods: 1987 to 1999

(Capital Investment is scaled by Total Assets and defined as increasing (decreasing) rate of capital expenditure)

A. The first CI-spread portfolio:

Formation Year	1987/7~ 1988/6	1988/7~ 1989/6	1989/7~ 1990/6	1990/7~ 1991/6	1991/7~ 1992/6	1992/7~ 1993/6	1993/7~ 1994/6	1994/7~ 1995/6	1995/7~ 1996/6	1996/7~ 1997/6	1997/7~ 1998/6	1998/7~ 1999/6	1999/7~ 2000/6
1987	-5.1691	-12.9239	5.6668	-4.9884	0.2671								
1988		3.7518	4.1294	-6.4517	6.0591	2.5464							
1989			-0.7613	-1.2398	-2.3731	-2.2595	-25.1155						
1990				1.7407	-3.0400	-3.0237	5.5058	-14.2672					
1991					-0.2281	3.3097	14.6578	6.0168	-17.9294				
1992						3.6242	-7.7970	6.8128	-6.5089	11.9426			
1993							5.2303	4.7616	-1.0777	2.4627	0.6239		
1994								4.8252	-6.9211	-9.6839	5.8450	-2.0853	
1995									-2.7512	-15.8193	-2.2487	-21.8570	-6.6530
1996										-1.6405	2.5948	-29.5973	-12.7499
1997											7.1396	-41.1591	-5.1262
1998												-7.2284	5.1159
1999													13.9743
Average return (t-statistics)	-5.1691	-4.5861 (-0.55)	3.0116 (1.55)	-2.7348 (-1.48)	0.1370 (0.09)	0.8394 (0.58)	-1.5037 (-0.22)	1.6298 (0.41)	-7.0377* (-2.39)	-2.5477 (-0.53)	2.7919 (1.63)	-20.3854** (-2.85)	-1.0878 (-0.23)

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table 16 Yearly Returns on the Characteristic-Adjusted CI-Spread Portfolio at Different Calendar Years: 1987 to 1999
(Continue)

B. The second CI-spread portfolio:

Formation Year	1987/7~ 1988/6	1988/7~ 1989/6	1989/7~ 1990/6	1990/7~ 1991/6	1991/7~ 1992/6	1992/7~ 1993/6	1993/7~ 1994/6	1994/7~ 1995/6	1995/7~ 1996/6	1996/7~ 1997/6	1997/7~ 1998/6	1998/7~ 1999/6	1999/7~ 2000/6
1987	-11.7141	-27.6393	12.9672	-7.9877	7.7634								
1988		-0.8158	11.1847	-17.9290	3.8177	5.2505							
1989			-2.5098	14.4555	-1.9036	-16.8399	-49.3827						
1990				18.1944	-3.8015	0.5461	9.7766	-13.9307					
1991					9.0962	-3.3704	15.7116	8.5345	-29.9324				
1992						1.5927	-16.0025	5.6843	-14.5832	15.5237			
1993							10.9281	8.4930	1.8384	1.9397	7.3975		
1994								3.3063	-8.8262	-7.5797	4.0789	-3.0445	
1995									18.8226	-24.4502	-7.0265	-21.6696	-15.0068
1996										12.4589	-3.1521	-4.8915	-3.2623
1997											8.8904	-43.7884	-15.8163
1998												-23.1801	2.9190
1999													19.4475
Average return (t-statistics)	-11.7141	-14.2276 (-1.06)	7.2140 (1.48)	1.6833 (0.19)	2.9944 (1.17)	-2.5642 (-0.67)	-5.7938 (-0.47)	2.4175 (0.58)	-6.5362 (-0.80)	-0.4215 (-0.06)	2.0376 (0.66)	-19.3148* (-2.61)	-2.3438 (-0.36)

• * represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table 42 Regression Results for the Capital Investment (CI) Portfolio's Year 1 Returns on the Three Factors: July 1987 to June 2000

A. Capital Investment is scaled by Sales and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.1078	0.9236***	0.4054***	0.2479***	0.8204
2 nd	0.0972	0.8564***	0.2409***	0.3623***	0.9276
3 rd	0.0815	0.8783***	-0.0524	0.2675***	0.9186
4 th	0.1176	0.8846***	-0.0792	0.2555***	0.8684
Highest	-0.3572	0.9011***	0.1791***	0.0657	0.9196
CI-spread 1 (t-value)	0.1145 (0.44)	-0.0028 (-0.15)	0.2732*** (6.80)	0.1445*** (3.53)	0.2718
CI-spread 2 (t-value)	0.2494 (0.53)	0.0225 (0.64)	0.2262*** (3.08)	0.1822** (2.43)	0.0821

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

B. Capital Investment is scaled by Sales and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.0146	0.9104***	0.3248***	0.2400***	0.8239
2 nd	0.2509	0.8434***	0.1642***	0.2937***	0.9047
3 rd	0.0186	0.8646***	-0.0793	0.2749***	0.9024
4 th	0.3092	0.9119***	0.1010*	0.2291***	0.8865
Highest	-0.4218	0.9242***	0.1721***	0.1853***	0.9068
CI-spread 1 (t-value)	0.1744 (0.57)	-0.0411* (-1.80)	0.1080** (2.26)	0.0597 (1.22)	0.0390
CI-spread 2 (t-value)	0.4071 (0.83)	-0.0137 (-0.38)	0.1527** (2.02)	0.0548 (0.71)	0.0109

C. Capital Investment is scaled by Total Assets and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.0924	0.9133***	0.4001***	0.1822**	0.8324
2 nd	-0.0023	0.8575***	0.2341***	0.3121***	0.9123
3 rd	0.5271	0.8970***	-0.0344	0.3729***	0.9020
4 th	0.0600	0.8766***	-0.0615	0.2094***	0.8842
Highest	-0.4885	0.9081***	0.1576***	0.1769***	0.9153
CI-spread 1 (t-value)	0.1669 (0.62)	-0.0069 (-0.35)	0.2691*** (6.45)	0.0540 (1.27)	0.2087
CI-spread 2 (t-value)	0.3961 (0.87)	0.0052 (0.15)	0.2425*** (3.42)	0.0053 (0.07)	0.0546

D. Capital Investment is scaled by Total Assets and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	0.0059	0.9182***	0.3782***	0.2061***	0.8232
2 nd	0.2203	0.8446***	0.1540***	0.3540***	0.8982
3 rd	0.1215	0.8890***	-0.0612	0.2549***	0.9028
4 th	0.1509	0.8844***	0.0180	0.1868***	0.8880
Highest	-0.5172*	0.9267***	0.2198	0.2676***	0.9173
CI-spread 1 (t-value)	0.2962 (1.11)	-0.0242 (-1.22)	0.1472*** (3.56)	0.0528 (1.25)	0.0738
CI-spread 2 (t-value)	0.5231 (1.08)	-0.0086 (-0.24)	0.1585** (2.12)	-0.0615 (-0.81)	0.0129

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

- \bar{R}^2 means adjusted R-square

Table 43 Regression Results for the Capital Investment (CI) Portfolio's Year 2 Returns on the Three Factors: July 1988 to June 2000

A. Capital Investment is scaled by Sales and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.3105	0.9206***	0.3758***	0.0929*	0.8990
2 nd	-0.1385	0.8677***	0.1386***	0.2392***	0.8802
3 rd	0.0578	0.9109***	0.0375	0.3396***	0.9143
4 th	0.2915	0.9044***	0.0063	0.2333***	0.8757
Highest	0.0253	0.9086***	0.0602	0.1982***	0.8632
CI-spread 1 (t-value)	-0.3829 (-1.47)	-0.0124 (-0.55)	0.2239*** (5.61)	-0.0497 (-1.10)	0.1685
CI-spread 2 (t-value)	-0.3358 (-0.88)	0.0120 (0.36)	0.3156*** (5.40)	-0.1053 (-1.60)	0.1687

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

B. Capital Investment is scaled by Sales and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.6138**	0.8956***	0.2977***	0.1850***	0.9210
2 nd	-0.1296	0.8956***	0.0835*	0.2269***	0.9088
3 rd	0.1649	0.8716***	0.0619	0.3597***	0.8976
4 th	0.4181	0.9124***	0.0041	0.0966	0.8576
Highest	0.0893	0.9478***	0.1458**	0.2150***	0.8702
CI-spread 1 (t-value)	-0.6254** (-2.52)	-0.0345 (-1.62)	0.1157*** (3.05)	0.0502 (1.17)	0.0651
CI-spread 2 (t-value)	-0.7031 (-1.95)	-0.0522* (-1.68)	0.1519*** (2.75)	-0.0299 (-0.48)	0.0418

C. Capital Investment is scaled by Total Assets and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.3228	0.9183***	0.3709***	0.0606	0.9129
2 nd	-0.2207	0.8786***	0.2304***	0.2230***	0.8797
3 rd	0.2898	0.8707***	0.0872*	0.2902***	0.8913
4 th	0.1801	0.9215***	-0.0442	0.2298***	0.8833
Highest	-0.0341	0.9004***	0.0809	0.2736***	0.8745
CI-spread 1 (t-value)	-0.3447 (-1.27)	-0.0125 (-0.53)	0.2823*** (6.80)	-0.1099** (-2.35)	0.2463
CI-spread 2 (t-value)	-0.2887 (-0.88)	0.0179 (0.63)	0.2900*** (5.76)	-0.2130*** (-3.75)	0.2342

D. Capital Investment is scaled by Total Assets and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.6038**	0.8789***	0.3192***	0.1456***	0.9122
2 nd	-0.2292	0.8603***	0.2264***	0.2793***	0.8868
3 rd	0.3641	0.8950***	-0.0022	0.3039***	0.9071
4 th	0.1345	0.9225***	-0.0220	0.1198**	0.8698
Highest	0.1078	0.9004***	0.2629***	0.2468***	0.8873
CI-spread 1 (t-value)	-0.5377** (-2.33)	-0.0418** (-2.11)	0.1524*** (4.32)	0.0291 (0.73)	0.1187
CI-spread 2 (t-value)	-0.7116** (-2.34)	-0.0215 (-0.82)	0.0563 (1.21)	-0.1013* (-1.93)	0.0146

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

- \bar{R}^2 means adjusted R-square

Table 44 Regression Results for the Capital Investment (CI) Portfolio's Year 3 Returns on the Three Factors: July 1989 to June 2000

A. Capital Investment is scaled by Sales and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.3041	0.9748***	0.3565***	0.1186*	0.8952
2 nd	-0.2068	0.8775***	0.1383***	0.3450***	0.8964
3 rd	0.3748	0.8761***	0.0782*	0.2196***	0.8785
4 th	0.5823	0.9066***	-0.0065	0.2527***	0.8535
Highest	-0.0019	0.9219***	0.0261	0.2169***	0.8701
CI-spread 1 (t-value)	-0.5456* (-1.72)	0.0119 (0.41)	0.2376*** (4.99)	-0.0030 (-0.05)	0.1474
CI-spread 2 (t-value)	-0.3022 (-0.76)	0.0529 (1.43)	0.3304*** (5.49)	-0.0983 (-1.34)	0.2051

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

B. Capital Investment is scaled by Sales and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.2437	0.9342***	0.2897***	0.2200***	0.8633
2 nd	-0.0260	0.8749***	0.1277***	0.2920***	0.9131
3 rd	0.4467	0.8851***	0.0477	0.2988***	0.8849
4 th	0.4477	0.9371***	-0.0187	0.1031	0.8548
Highest	-0.0604	0.9204***	0.1193**	0.2016***	0.8925
CI-spread 1 (t-value)	-0.3285 (-1.14)	-0.0242 (-0.91)	0.1584*** (3.65)	0.1037* (1.96)	0.1023
CI-spread 2 (t-value)	-0.1833 (-0.47)	0.0137 (0.38)	0.1703*** (2.88)	0.0184 (0.26)	0.0418

C. Capital Investment is scaled by Total Assets and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.2672	0.9689***	0.3709***	0.1253*	0.8758
2 nd	-0.1438	0.8693***	0.1867***	0.2911***	0.8836
3 rd	0.2894	0.8995***	0.0844*	0.2285***	0.8846
4 th	0.6245*	0.8900***	0.0084	0.2358***	0.8566
Highest	0.0847	0.9284***	0.0022	0.2581***	0.8707
CI-spread 1 (t-value)	-0.5601* (-1.80)	0.0099 (0.34)	0.2735*** (5.83)	-0.0388 (-0.68)	0.1986
CI-spread 2 (t-value)	-0.3519 (-0.90)	0.0405 (1.12)	0.3687*** (6.26)	-0.1328* (-1.86)	0.2506

D. Capital Investment is scaled by Total Assets and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.3918	0.9170***	0.2440***	0.1764***	0.8708
2 nd	0.1104	0.8886***	0.2058***	0.3196***	0.8978
3 rd	0.3504	0.8821***	0.0227	0.3187***	0.8708
4 th	0.5469	0.8846***	0.0325	0.1053*	0.8559
Highest	-0.1455	0.9760***	0.1541***	0.2297***	0.8661
CI-spread 1 (t-value)	-0.3414 (-1.19)	-0.0275 (-1.03)	0.1316*** (3.05)	0.0805 (1.53)	0.0684
CI-spread 2 (t-value)	-0.2463 (-0.57)	-0.0590 (-1.47)	0.0899 (1.38)	-0.0533 (-0.67)	0.0070

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

Table 45 Regression Results for the Capital Investment (CI) Portfolio's Year 4 Returns on the Three Factors: July 1990 to June 2000

A. Capital Investment is scaled by Sales and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.2434	0.9934***	0.2154***	0.1771***	0.8854
2 nd	-0.1197	0.8521***	0.1671***	0.3211***	0.8719
3 rd	0.3538	0.8902***	-0.1074*	0.2663***	0.8480
4 th	0.3592	0.8847***	0.0290	0.3086***	0.8603
Highest	0.0921	0.8530***	0.0262	0.1389**	0.8832
CI-spread 1 (t-value)	-0.4071 (-1.44)	0.0539* (1.97)	0.1637*** (3.49)	0.0254 (0.49)	0.1060
CI-spread 2 (t-value)	-0.3354 (-0.91)	0.1405*** (3.95)	0.1892*** (3.11)	0.0382 (0.57)	0.1683

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

B. Capital Investment is scaled by Sales and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.2995	0.9612***	0.1927***	0.3073***	0.8780
2 nd	0.2922	0.8496***	0.1596***	0.3160***	0.8524
3 rd	0.3014	0.9087***	-0.1519**	0.3608***	0.8463
4 th	0.1960	0.8788***	0.0150	0.0968	0.8725
Highest	0.0461	0.8724***	0.0809	0.1011*	0.8856
CI-spread 1 (t-value)	-0.1247 (-0.45)	0.0298 (1.11)	0.1282*** (2.78)	0.2127*** (4.19)	0.1538
CI-spread 2 (t-value)	-0.3456 (-0.96)	0.0888** (2.55)	0.1117* (1.88)	0.2061*** (3.14)	0.1101

C. Capital Investment is scaled by Total Assets and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.1106	1.0132***	0.2429***	0.1508**	0.8963
2 nd	-0.1128	0.8647***	0.2584***	0.2997***	0.8839
3 rd	0.3718	0.8677***	-0.0280	0.3059***	0.8398
4 th	0.2463	0.8971***	-0.0778	0.2839***	0.8571
Highest	0.1450	0.8656***	0.0018	0.1546***	0.8880
CI-spread 1 (t-value)	-0.3073 (-1.26)	0.0576** (2.45)	0.2886*** (7.16)	0.0060 (0.16)	0.3256
CI-spread 2 (t-value)	-0.2555 (-0.80)	0.1475*** (4.79)	0.2410*** (4.57)	-0.0038 (-0.07)	0.2758

D. Capital Investment is scaled by Total Assets and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.2936	0.9374***	0.2021***	0.3082***	0.8778
2 nd	0.0094	0.8734***	0.1971***	0.3337***	0.8702
3 rd	0.4634	0.8841***	-0.0906	0.3692***	0.8383
4 th	0.1863	0.8981***	-0.0412	0.1362**	0.8906
Highest	0.0089	0.8908***	0.1145**	0.1284**	0.8784
CI-spread 1 (t-value)	-0.2397 (-1.00)	0.0110 (0.48)	0.1629*** (4.12)	0.1886*** (4.32)	0.2065
CI-spread 2 (t-value)	-0.3025 (-0.82)	0.0466 (1.31)	0.0876 (1.44)	0.1797*** (2.68)	0.0547

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

Table 46 Regression Results for the Capital Investment (CI) Portfolio's Year 5 Returns on the Three Factors: July 1991 to June 2000

A. Capital Investment is scaled by Sales and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.4985*	0.9461***	0.3606***	0.1045*	0.8888
2 nd	-0.0590	0.8711***	0.1188*	0.1485**	0.8402
3 rd	-0.2308	0.8835***	-0.2052***	0.1234*	0.8713
4 th	-0.0310	0.8823***	-0.0617	0.2823***	0.8792
Highest	0.3495	0.9058***	0.0971	0.0497	0.8004
CI-spread 1 (t-value)	-0.4380 (-1.54)	0.0145 (0.44)	0.2220*** (3.71)	-0.0395 (-0.67)	0.0939
CI-spread 2 (t-value)	-0.8480** (-2.14)	0.0403 (0.88)	0.2635*** (3.17)	0.0548 (0.67)	0.0741

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

B. Capital Investment is scaled by Sales and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.4876	0.9168***	0.3164***	0.1411**	0.8592
2 nd	-0.3173	0.8487***	-0.1277	0.0967	0.7792
3 rd	-0.2657	0.8743***	-0.2043***	0.1992***	0.8743
4 th	0.4899	0.9468***	0.0545	0.0838	0.8768
Highest	-0.2145	0.8860***	0.1847**	0.1589**	0.8203
CI-spread 1 (t-value)	-0.5401* (-1.67)	-0.0337 (-0.90)	-0.0253 (-0.37)	-0.0024 (-0.04)	-0.0207
CI-spread 2 (t-value)	-0.2731 (-0.71)	0.0308 (0.69)	0.1317 (1.63)	-0.0178 (-0.22)	-0.0025

C. Capital Investment is scaled by Total Assets and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.4299	0.9401***	0.3938***	0.0884	0.8828
2 nd	0.0019	0.9099***	0.2122***	0.0801	0.8333
3 rd	-0.3706	0.9065***	-0.1516**	0.2286***	0.8532
4 th	0.1281	0.8557***	-0.0662	0.1499**	0.8790
Highest	0.2932	0.8932***	0.0458	0.1005	0.7896
CI-spread 1 (t-value)	-0.4246 (-1.44)	0.0506 (1.49)	0.3132*** (5.06)	-0.0409 (-0.67)	0.1747
CI-spread 2 (t-value)	-0.7231* (-1.82)	0.0470 (1.02)	0.3480*** (4.17)	-0.0121 (-0.15)	0.1212

D. Capital Investment is scaled by Total Assets and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.5207*	0.8936***	0.3278***	0.1936***	0.8622
2 nd	-0.0228	0.8679***	0.1165	0.0419	0.8082
3 rd	-0.3762	0.8878***	-0.2640***	0.2941***	0.8739
4 th	0.3081	0.9135***	0.0929	0.0369	0.8902
Highest	0.1113	0.9258***	0.1048	0.0791	0.8226
CI-spread 1 (t-value)	-0.4815* (-1.76)	-0.0388 (-1.23)	0.1233** (2.15)	0.0598 (1.06)	0.0663
CI-spread 2 (t-value)	-0.6321* (-1.68)	-0.0322 (-0.74)	0.2229*** (2.83)	0.1145 (1.47)	0.0993

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

- \bar{R}^2 means adjusted R-square

Table 47 Regression Results for the Benchmark-Adjusted Capital Investment (CI) Portfolio's Year 1 Returns on the Three Factors: July 1987 to June 2000

A. Capital Investment is scaled by Sales and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.0154	0.0293	0.2155***	0.0381	0.1369
2 nd	0.0061	-0.0305***	0.0691***	0.0815***	0.1272
3 rd	0.0006	-0.0052	-0.0828***	0.0314	0.0534
4 th	0.1794	-0.0030	-0.1200***	-0.0228	0.1171
Highest	-0.2115	0.0038	0.0104	-0.0748**	0.0099
CI-spread 1 (t-value)	0.0114 (0.05)	-0.0010 (-0.06)	0.1971*** (5.53)	0.1086*** (2.98)	0.1968
CI-spread 2 (t-value)	0.1960 (0.45)	0.0255 (0.79)	0.2051*** (3.03)	0.1128 (1.64)	0.0633

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

B. Capital Investment is scaled by Sales and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.0279	0.0169	0.1393***	-0.0403	0.0452
2 nd	0.1538	-0.0391***	0.0006	0.0235	0.0400
3 rd	0.0340	-0.0112	-0.0851***	0.0245	0.0609
4 th	0.2833	0.0118	0.0235	0.0275	-0.0042
Highest	-0.2364	0.0273*	-0.0013	0.0216	0.0025
CI-spread 1 (t-value)	0.0395 (0.15)	-0.0307 (-1.55)	0.0589 (1.42)	-0.0329 (-0.78)	0.0101
CI-spread 2 (t-value)	0.2085 (0.46)	-0.0104 (-0.31)	0.1407** (1.98)	-0.0618 (-0.85)	0.0099

C. Capital Investment is scaled by Total Assets and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	0.0055	0.0192	0.2114***	-0.0397	0.1224
2 nd	-0.1043	-0.0316***	0.0427**	0.0588***	0.0977
3 rd	0.3121*	0.0036	-0.0991***	0.0715**	0.0919
4 th	0.1437	-0.0066	-0.0797***	-0.0630***	0.1036
Highest	-0.3164	0.0097	-0.0129	0.0260	-0.0128
CI-spread 1 (t-value)	0.0370 (0.16)	-0.0077 (-0.44)	0.1734*** (4.74)	0.0280 (0.75)	0.1159
CI-spread 2 (t-value)	0.3220 (0.75)	0.0095 (0.30)	0.2243*** (3.36)	-0.0657 (-0.97)	0.0570

D. Capital Investment is scaled by Total Assets and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	0.0066	0.0192	0.1639***	-0.0401	0.0620
2 nd	0.1122	-0.0367***	-0.0238	0.0389	0.0715
3 rd	0.0916	0.0015	-0.0779***	0.0169	0.0278
4 th	0.1814	-0.0011	-0.0096	-0.0423	-0.0035
Highest	-0.3673*	0.0216	0.0183	0.0901	0.0535
CI-spread 1 (t-value)	0.1523 (0.63)	-0.0190 (-1.06)	0.0657 (1.75)	-0.0245 (-0.64)	0.0078
CI-spread 2 (t-value)	0.3739 (0.83)	-0.0024 (-0.07)	0.1455** (2.08)	-0.1302* (-1.82)	0.0275

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

- The benchmark-adjusted return means return adjusted by size and book-to-market equity. It is used to replace the risk premium on the CI portfolio as the dependent variable. Compare to the time-series regression of the capital investment portfolio's first year risk premium on the market, size, and book-to-market factor, the explaining power of the factor model decreases apparently here. Most of coefficients are insignificantly and the adjusted R-square reduces to 15% below.
- However, the insignificant intercept also shows that there is no obvious pattern between capital investment and the remained adjusted return that doesn't be explained by factors. Furthermore, the highest CI portfolio always has the least remainder. The high capital investment portfolio does not obtain a significant and positive reward as its high investment.
- The factor model is also applied to the CI-spread portfolio. The insignificantly positive intercept also implies that the high CI portfolio doesn't have a higher excess adjusted return.

Table 48 Regression Results for the Benchmark-Adjusted Capital Investment (CI) Portfolio's Year 2 Returns on the Three Factors: July 1988 to June 2000

A. Capital Investment is scaled by Sales and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.1998	0.0102	0.1299***	0.0182	0.0716
2 nd	-0.1020	-0.0340*	0.0261	-0.0146	0.0082
3 rd	0.0574	0.0050	-0.0453*	0.0837***	0.0539
4 th	0.0617	-0.0033	-0.0573*	0.0110	0.0034
Highest	0.1197	0.0069	-0.0554*	-0.0012	-0.0005
CI-spread 1 (t-value)	-0.2416 (-1.08)	-0.0137 (-0.71)	0.1343*** (3.93)	-0.0032 (-0.08)	0.0807
CI-spread 2 (t-value)	-0.3195 (-0.96)	0.0033 (0.12)	0.1853*** (3.65)	0.0193 (0.34)	0.0724

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

B. Capital Investment is scaled by Sales and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.5372***	-0.0094	0.1261***	0.0362	0.1370
2 nd	-0.0686	-0.0118	-0.0361	-0.0009	0.0010
3 rd	0.0637	-0.0284*	-0.0094	0.1082***	0.0725
4 th	0.2916	0.0147	-0.0602*	-0.0704*	0.0312
Highest	0.1308	0.0281	-0.0286	0.0438	0.0035
CI-spread 1 (t-value)	-0.5141** (-2.39)	-0.0320* (-1.73)	0.0894*** (2.71)	0.0309 (0.83)	0.0495
CI-spread 2 (t-value)	-0.6680** (-2.09)	-0.0375 (-1.37)	0.1547*** (3.17)	-0.0076 (-0.14)	0.0522

C. Capital Investment is scaled by Total Assets and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.2952	-0.0002	0.1219***	-0.0388	0.0793
2 nd	-0.1846	-0.0194	0.0562*	-0.0083	0.0072
3 rd	0.1339	-0.0298**	0.0153	0.0550**	0.0499
4 th	0.0040	0.0119	-0.0841**	0.0085	0.0261
Highest	0.1042	-0.0027	-0.0398	0.0494	0.0031
CI-spread 1 (t-value)	-0.2940 (-1.21)	-0.0144 (-0.69)	0.1510*** (4.08)	-0.0525 (-1.26)	0.0917
CI-spread 2 (t-value)	-0.3994 (-1.40)	0.0025 (0.10)	0.1617*** (3.69)	-0.0882* (-1.79)	0.0852

D. Capital Investment is scaled by Total Assets and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.4993***	-0.0264*	0.1347***	0.0268	0.1454
2 nd	-0.2434	-0.0459***	0.0876***	0.0160	0.0867
3 rd	0.1738	-0.0032	-0.0622**	0.0643*	0.0297
4 th	0.0860	0.0189	-0.0823**	-0.0599	0.0456
Highest	0.1660	-0.0039	0.0501*	0.0661*	0.0285
CI-spread 1	-0.4974**	-0.0436**	0.1272***	0.0183	0.0999
(t-value)	(-2.30)	(-2.35)	(3.85)	(0.49)	
CI-spread 2	-0.6653**	-0.0225	0.0845**	-0.0393	0.0127
(t-value)	(-2.42)	(-0.95)	(2.01)	(-0.83)	

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

Table 49 Regression Results for the Benchmark-Adjusted Capital Investment (CI) Portfolio's Year 3 Returns on the Three Factors: July 1989 to June 2000

A. Capital Investment is scaled by Sales and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.1559	0.0490*	0.0866*	0.0744	0.0434
2 nd	-0.1348	-0.0300	-0.0057	0.1028***	0.0562
3 rd	0.2709	-0.0231	0.0064	0.0295	-0.0030
4 th	0.3686**	0.0101	-0.0272	0.0229	-0.0081
Highest	-0.1167	0.0048	-0.0584*	0.0346	0.0073
CI-spread 1 (t-value)	-0.2713 (-1.11)	0.0020 (0.089)	0.0832** (2.26)	0.0599 (1.34)	0.0290
CI-spread 2 (t-value)	-0.0392 (-0.11)	0.0441 (1.36)	0.1449*** (2.75)	0.0398 (0.62)	0.0532

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

B. Capital Investment is scaled by Sales and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.0746	0.0212	0.1080**	0.0256	0.0285
2 nd	-0.1031	-0.0299	0.0024	0.0849**	0.0461
3 rd	0.2852	-0.0103	-0.0112	0.0062	-0.0169
4 th	0.3601	0.0256	-0.0703*	0.1225***	0.0559
Highest	-0.1678	0.0012	-0.0325	0.0155	-0.0130
CI-spread 1 (t-value)	-0.1850 (-0.77)	-0.0178 (-0.80)	0.1066*** (2.94)	-0.0137 (-0.31)	0.0435
CI-spread 2 (t-value)	0.0932 (0.26)	0.0200 (0.61)	0.1405*** (2.65)	0.0101 (0.16)	0.0350

C. Capital Investment is scaled by Total Assets and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.1727	0.0394	0.0920**	0.0765	0.0469
2 nd	-0.0750	-0.0408*	-0.0099	0.0906**	0.0478
3 rd	0.1679	-0.0079	0.0025	0.0759**	0.0161
4 th	0.3446**	-0.0056	-0.0118	-0.0091	-0.0202
Highest	0.0443	0.0151	-0.0622*	0.0594	0.0174
CI-spread 1 (t-value)	-0.3183 (-1.32)	-0.0055 (-0.25)	0.0780** (2.15)	0.0584 (1.33)	0.0256
CI-spread 2 (t-value)	-0.2170 (-0.64)	0.0242 (0.77)	0.1541*** (3.01)	0.0172 (0.28)	0.0519

D. Capital Investment is scaled by Total Assets and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.2302	0.0022	0.0772*	0.0034	0.0017
2 nd	-0.0269	-0.0337*	0.0627**	0.1377***	0.1253
3 rd	0.2390	-0.0064	-0.0239	0.0222	-0.0101
4 th	0.3162	-0.0191	-0.0454	0.0964**	0.0327
Highest	-0.0776	0.0517**	-0.0173	0.0351	0.0200
CI-spread 1 (t-value)	-0.2479 (-0.98)	-0.0320 (-1.37)	0.1013*** (2.66)	0.0048 (0.10)	0.0398
CI-spread 2 (t-value)	-0.1526 (-0.39)	-0.0495 (-1.38)	0.0945 (1.62)	-0.0317 (-0.45)	0.0091

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

Table 50 Regression Results for the Benchmark-Adjusted Capital Investment (CI) Portfolio's Year 4 Returns on the Three Factors: July 1990 to June 2000

A. Capital Investment is scaled by Sales and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.2350	0.0751***	0.0558	0.0597	0.0629
2 nd	-0.1568	-0.0554***	0.1079***	0.0539	0.1566
3 rd	0.1516	-0.0055	-0.0561	0.0143	0.0007
4 th	0.1573	-0.0100	0.0744**	0.1449***	0.1326
Highest	-0.0897	-0.0380**	-0.0331	-0.0080	0.0281
CI-spread 1 (t-value)	-0.2297 (-1.02)	0.0338 (1.56)	0.0612 (1.65)	-0.0117 (-0.29)	0.0241
CI-spread 2 (t-value)	-0.1453 (-0.44)	0.1131*** (3.56)	0.0890 (1.64)	0.0677 (1.13)	0.1015

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

B. Capital Investment is scaled by Sales and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.3016	0.0481**	0.1223***	0.0182	0.0908
2 nd	0.1899	-0.0642	0.1040***	0.0142	0.1054
3 rd	0.1146	0.0139	-0.0988***	0.1321***	0.1298
4 th	-0.0974	-0.0144	0.0606*	0.0060	0.0033
Highest	0.0290	-0.0199	-0.0547	0.0586	0.0294
CI-spread 1 (t-value)	-0.0216 (-0.10)	0.0091 (0.41)	0.1102*** (2.92)	-0.0161 (-0.39)	0.0502
CI-spread 2 (t-value)	-0.3306 (-0.98)	0.0680** (2.09)	0.1770*** (3.18)	-0.0404 (-0.66)	0.1049

C. Capital Investment is scaled by Total Assets and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.1540	0.0839	0.0892**	-0.0069	0.1319
2 nd	-0.1054	-0.0433**	0.1503***	0.0188	0.2050
3 rd	0.1126	-0.0377*	0.0001	0.0444	0.0177
4 th	0.0919	0.0031	-0.0236	0.1359***	0.1369
Highest	-0.0373	-0.0171	-0.0391	0.0535	0.0212
CI-spread 1 (t-value)	-0.1570 (-0.82)	0.0273 (1.47)	0.1511*** (4.76)	-0.0887** (-2.54)	0.2152
CI-spread 2 (t-value)	-0.1167 (-0.41)	0.1010*** (3.68)	0.1284*** (2.73)	-0.0604 (-1.17)	0.1640

D. Capital Investment is scaled by Total Assets and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.3408	0.0283	0.1154***	0.0592	0.0642
2 nd	-0.0736	-0.0457***	0.1591***	0.0256	0.2209
3 rd	0.2572	-0.0004	-0.0683*	0.1091***	0.0693
4 th	-0.0279	-0.0215	-0.0361	0.0437	0.0262
Highest	-0.0461	0.0027	-0.0056	0.0446	-0.0150
CI-spread 1 (t-value)	-0.1702 (-0.85)	0.0006 (0.03)	0.1581*** (4.76)	-0.0018 (-0.05)	0.1433
CI-spread 2 (t-value)	-0.2947 (-0.87)	0.0256 (0.78)	0.1210** (2.15)	0.0146 (0.24)	0.0205

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

Table 51 Regression Results for the Benchmark-Adjusted Capital Investment (CI) Portfolio's Year 5 Returns on the Three Factors: July 1991 to June 2000

A. Capital Investment is scaled by Sales and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.4495**	0.0317	0.2031***	0.0336	0.2025
2 nd	-0.1953	-0.0746***	0.0372	0.0007	0.0881
3 rd	-0.1085	0.0097	-0.0992**	0.0312	0.0375
4 th	0.0013	-0.0067	-0.0172	0.1468***	0.1092
Highest	0.1878	0.0066	0.0784	0.0345	-0.0083
CI-spread 1	-0.4170*	-0.0215	0.0895*	-0.0735	0.0301
(t-value)	(-1.78)	(-0.79)	(1.82)	(-1.51)	
CI-spread 2	-0.6373*	0.0250	0.1246	-0.0009	-0.0023
(t-value)	(-1.75)	(0.60)	(1.63)	(-0.01)	

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

B. Capital Investment is scaled by Sales and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.6019**	0.0103	0.2104***	-0.0095	0.1340
2 nd	-0.2827	-0.0433	-0.0744	-0.0199	0.0080
3 rd	-0.0790	-0.0016	-0.1076***	0.0848**	0.0635
4 th	0.3495	0.0320	0.0649	0.0362	0.0081
Highest	-0.1997	-0.0317	0.0939*	0.1523***	0.1035
CI-spread 1	-0.5172*	-0.0167	-0.0114	-0.1089*	0.0117
(t-value)	(-1.92)	(-0.54)	(-0.20)	(-1.96)	
CI-spread 2	-0.4022	0.0420	0.1164	-0.1618**	0.0421
(t-value)	(-1.20)	(1.08)	(1.65)	(-2.33)	

C. Capital Investment is scaled by Total Assets and defined as change rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.4061	0.0297	0.2668***	-0.0179	0.2540
2 nd	-0.1172	-0.0497**	0.0701	-0.0203	0.0561
3 rd	-0.1978	0.0191	-0.0515	0.0815**	0.0284
4 th	0.0763	-0.0262	-0.0246	0.0700*	0.0116
Highest	0.1622	0.0025	0.0246	0.0963	-0.0023
CI-spread 1	-0.3809	0.0019	0.1684***	-0.1023	0.0858
(t-value)	(-1.53)	(0.07)	(3.23)	(-1.99)	
CI-spread 2	-0.5682	0.0272	0.2422***	-0.1142	0.0736
(t-value)	(-1.59)	(0.66)	(3.24)	(-1.55)	

D. Capital Investment is scaled by Total Assets and defined as increasing (decreasing) rate of capital expenditure

Capital Investment	Regression Coefficients				
	β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	-0.5718**	-0.0253	0.1902***	0.0517	0.1784
2 nd	-0.0803	-0.0346	0.0839*	-0.0992**	0.0603
3 rd	-0.1805	0.0140	-0.1477***	0.1387***	0.1735
4 th	0.1868	-0.0063	0.0832*	-0.0037	0.0118
Highest	0.0551	0.0127	0.0425	0.1276**	0.0294
CI-spread 1 (t-value)	-0.4470* (-1.90)	-0.0332 (-1.22)	0.0742 (1.50)	-0.0857* (-1.76)	0.0365
CI-spread 2 (t-value)	-0.6269* (-1.86)	-0.0380 (-0.98)	0.1477** (2.09)	-0.0760 (-1.09)	0.0385

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

- \bar{R}^2 means adjusted R-square

Table trqc-1 Descriptive statistics for the 9 SZ-BM portfolios (1987/7 to 2000/6)

a. number of firms

- Positive change value on the ratio of output to its trend value

		Book-to-market equity		
		Low	Medium	High
Size	Small	7	9	11
	Medium	9	10	9
	Large	15	11	8

- negative change value on the ratio of output to its trend value

		Book-to-market equity		
		Low	Medium	High
Size	Small	10	11	13
	Medium	11	11	13
	Large	10	11	8

b. value-weighted Scholes-Williams beta

- Positive change value on the ratio of output to its trend value

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.7531	0.7870	0.7685
	Medium	0.9001	0.8286	0.8056
	Large	0.9646	0.8067	0.7817

- negative change value on the ratio of output to its trend value

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.8673	0.6890	0.7939
	Medium	0.9053	0.8299	0.8003
	Large	0.8676	0.8457	0.7991

c. value-weighted size

- Positive change value on the ratio of output to its trend value

		Book-to-market equity		
		Low	Medium	High
Size	Small	3,255	3,242	3,439
	Medium	7,521	7,629	7,598
	Large	72,260	40,121	40,992

Unit: one million NT dollar

- negative change value on the ratio of output to its trend value

		Book-to-market equity		
		Low	Medium	High
Size	Small	3,242	3,334	3,452
	Medium	7,905	7,519	7,337
	Large	84,752	43,207	38,469

Unit: one million NT dollar

d. value-weighted book-to-market equity

- Positive change value on the ratio of output to its trend value

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.2721	0.4289	0.7063
	Medium	0.2795	0.4257	0.6785
	Large	0.2643	0.4366	0.6435

- negative change value on the ratio of output to its trend value

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.2740	0.4506	0.6727
	Medium	0.2840	0.4263	0.6554
	Large	0.2703	0.4373	0.6910

- e. value-weighted capital investment increasing (decreasing) rate (scaled by total assets)

- Positive change value on the ratio of output to its trend value

		Book-to-market equity		
		Low	Medium	High
Size	Small	-1.0161	1.3161	0.2787
	Medium	0.5228	9.0409	0.8908
	Large	0.8853	0.7818	1.4842

- negative change value on the ratio of output to its trend value

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.2125	3.8471	1.2626
	Medium	1.4808	0.0973	0.7233
	Large	14.9194	0.3836	0.4850

- f. monthly value-weighted excess return

- Positive change value on the ratio of output to its trend value

		Book-to-market equity		
		Low	Medium	High
Size	Small	1.7615	2.1539	1.4246
	Medium	1.4056	1.0266	0.6776
	Large	1.1416	0.8591	1.3598

Unit: %

- negative change value on the ratio of output to its trend value

		Book-to-market equity		
		Low	Medium	High
Size	Small	2.3550	1.8304	1.9966
	Medium	1.6128	1.6273	1.7694
	Large	1.7921	1.0158	1.1171

Unit: %

- g. standard deviation of excess return

- Positive change value on the ratio of output to its trend value

		Book-to-market equity		
		Low	Medium	High
Size	Small	15.18	17.23	15.28
	Medium	15.73	13.82	15.02
	Large	13.00	12.30	14.33

Unit: %

- negative change value on the ratio of output to its trend value

		Book-to-market equity		
		Low	Medium	High
Size	Small	16.57	15.71	16.52
	Medium	14.43	14.79	16.38
	Large	14.90	11.83	14.57

Unit: %

A. Regression based on Individual Stocks

	Change value on the ratio of output to its trend value	Intercept	Beta	Size	Book-to-mark et	Capital Investment Increasing (decreasing) Rate scaled by Total Assets
(a)	Positive	3.0998* (1.84)	-2.9022* (-1.86)			
	Negative	1.4560 (0.92)	0.1451 (0.09)			
(b)	Positive	6.5418 (1.18)		-0.3280 (-1.05)		
	Negative	8.8667* (1.67)		-0.4569 (-1.54)		
(c)	Positive	1.1544 (0.93)			-0.0038 (-0.01)	
	Negative	1.3172 (1.05)			-0.3390 (-0.63)	
(g)	Positive	1.3403 (1.25)				0.0224 (0.72)
	Negative	1.7597 (1.54)				0.0102 (0.31)
(h)	Positive	5.2899 (0.97)	-1.3440 (-1.14)	-0.1983 (-0.64)		
	Negative	10.2651** (2.01)	0.4707 (0.34)	-0.5647* (-1.95)		
(i)	Positive	3.3395* (1.85)	-3.0828** (-2.10)		0.1499 (0.31)	
	Negative	2.0693 (1.25)	-1.0764 (-0.77)		-0.2027 (-0.39)	
(m)	Positive	3.0820* (1.79)	-2.8818* (-1.80)			0.0387 (1.25)
	Negative	1.3673 (0.87)	0.2548 (0.16)			0.0084 (0.26)
(n)	Positive	5.9348 (1.15)		-0.3012 (-1.02)	-0.0945 (-0.21)	
	Negative	8.2435 (1.65)		-0.4327 (-1.56)	-0.2389 (-0.49)	
(r)	Positive	6.6096 (1.19)		-0.3330 (-1.06)		0.0438 (1.45)
	Negative	9.0224* (1.68)		-0.4655 (-1.55)		-0.0008 (-0.02)
(v)	Positive	1.1898 (0.96)			0.0075 (0.01)	0.0243 (0.79)
	Negative	1.2646 (1.01)			-0.3945 (-0.73)	0.0164 (0.54)
(w)	Positive	5.1803 (0.99)	-1.8681 (-1.65)	-0.1723 (-0.57)	-0.0425 (-0.10)	
	Negative	10.2995** (2.07)	0.2977 (0.25)	-0.5727** (-2.03)	-0.3551 (-0.72)	
(aa)	Positive	5.3243 (0.98)	-1.2996 (-1.06)	-0.2036 (-0.65)		0.0484 (1.56)
	Negative	10.4710** (2.04)	0.5297 (0.39)	-0.5793** (-1.98)		-0.0017 (-0.05)
(ae)	Positive	3.3456* (1.81)	-3.0210** (-2.01)		0.2001 (0.41)	0.0337 (1.11)
	Negative	2.0609 (1.25)	-1.1169 (-0.80)		-0.2651 (-0.52)	0.0158 (0.51)
(ai)	Positive	6.0543 (1.18)		-0.3094 (-1.05)	-0.1000 (-0.22)	0.0444 (1.51)
	Negative	7.9775 (1.58)		-0.4166 (-1.48)	-0.2705 (-0.56)	0.0065 (0.21)
(am)	Positive	5.2574 (1.01)	-1.8158 (-1.56)	-0.1788 (-0.60)	-0.0115 (-0.03)	0.0448 (1.49)
	Negative	10.1433** (2.02)	0.3067 (0.26)	-0.5641** (-1.98)	-0.4010 (-0.83)	0.0043 (0.14)

Table trqc-4 Yearly Returns on the Characteristic-Adjusted Capital Investment and CI-Spread Portfolio at Year 1, 2, 3, 4, and 5 formed on the Change Value on the Ratio of Output to its Trend Value and Capital Investment: 1987 to 1999
(Capital Investment is scaled by Total Assets and defined as increasing (decreasing) rate of capital expenditure)

CI Portfolio	Change Value on the Ratio of Output to its Trend Value	Average Number of Firms	Returns in Year 1		Returns in Year 2		Returns in Year 3		Returns in Year 4		Returns in Year 5	
			Mean Return (t-statistics)	Number of Positive Returns	Mean Return (t-statistics)	Number of Positive Returns	Mean Return (t-statistics)	Number of Positive Returns	Mean Return (t-statistics)	Number of Positive Returns	Mean Return (t-statistics)	Number of Positive Returns
lowest	Positive	16	-1.0955 (-0.29)	6	-9.8248** (-2.27)	4	-1.5553 (-0.44)	3	-8.5509 (-1.45)	4	-11.9107** (-2.73)	2
	Negative	21	2.9337 (0.67)	8	-1.0865 (-0.22)	8	-5.2290 (-1.20)	4	-5.0092 (-1.14)	4	-6.5904 (-1.10)	4
2 nd	Positive	18	2.2764 (0.79)	8	-1.8688 (-0.38)	4	-8.9501 (-1.54)	5	1.7783 (0.21)	3	-6.2616 (-1.71)	2
	Negative	19	-1.5073 (-0.59)	5	-1.0438 (-0.66)	5	4.8154* (2.19)	8	1.7158 (0.43)	7	3.1921 (0.77)	4
3 rd	Positive	17	-0.5951 (-0.15)	6	1.9345 (0.87)	8	3.9135 (1.56)	7	5.5572 (1.17)	7	-9.6634 (-1.37)	2
	Negative	20	1.4954 (0.46)	8	1.3647 (0.41)	9	-2.1376 (-0.58)	5	-0.5294 (-0.13)	6	1.2954 (0.31)	5
4 th	Positive	19	-1.0936 (-0.34)	6	-0.3864 (-0.11)	4	3.3645 (0.83)	6	0.0439 (0.02)	6	-5.4566 (-1.48)	3
	Negative	18	3.9512 (1.04)	8	0.5055 (0.27)	8	-0.3501 (-0.10)	7	-1.7616 (-0.41)	5	6.8106** (2.46)	8
highest	Positive	18	-9.0113*** (-3.23)	2	-0.5932 (-0.15)	5	1.9172 (0.61)	7	4.2049 (0.59)	6	-2.3791 (-0.57)	4
	Negative	20	-1.0868 (-0.35)	5	-1.3891 (-0.48)	4	-2.5335 (-1.00)	3	-2.5397 (-0.71)	4	-0.5238 (-0.10)	3
CI-Spread 1	Positive	-	5.6429 (1.45)	9	-5.3570 (-1.19)	4	-7.8936* (-1.91)	4	-5.5108 (-0.96)	4	-5.1683 (-1.16)	3
	Negative	-	-0.7190 (-0.24)	7	-0.6233 (-0.23)	6	1.2350 (0.37)	5	0.5039 (0.25)	5	-4.8425 (-0.70)	3
CI-Spread 2	Positive	-	7.9158 (1.52)	8	-9.2316* (-1.83)	4	-3.4725 (-0.83)	4	-12.7559 (-1.20)	5	-9.5316 (-1.45)	5
	Negative	-	4.0206 (0.82)	10	0.3026 (0.07)	6	-2.6955 (-0.55)	3	-2.4695 (-0.50)	4	-6.0666 (-0.63)	5

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table trqc-42 Regression Results for the Capital Investment (CI) Portfolio Returns formed on Change Value on the Ratio of Output to its Trend Value and Capital Investment on the Three Factors: July 1987 to June 2000

A. Year 1

Capital Investment	Change value on the ratio of output to its trend value	Average Number of Firms	Regression Coefficients				
			β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	Positive	16	-0.1694	0.9104***	0.3173***	0.3568***	0.8772
	Negative	21	0.1434	0.9097***	0.4553***	0.1328	0.7347
2 nd	Positive	18	0.3231	0.7965***	0.2519***	0.5079***	0.7599
	Negative	19	0.3170	0.8321***	0.2459***	0.4517***	0.8572
3 rd	Positive	17	0.0174	0.8713***	-0.1301**	0.2094***	0.8568
	Negative	20	0.1777	0.8848***	0.1160**	0.3166***	0.8796
4 th	Positive	19	-0.1259	0.8489***	0.0395	0.1783**	0.8212
	Negative	18	0.3578	0.8980***	0.0630	0.2800***	0.8403
Highest	Positive	18	-0.9158**	0.8690***	0.1632***	0.1641***	0.8734
	Negative	20	-0.1511	0.9208***	0.3665***	0.3477***	0.8740
CI-spread 1 (t-value)	Positive	-	0.5977* (1.83)	-0.0055 (-0.23)	0.1833*** (3.63)	0.2612*** (5.07)	0.1938
	Negative	-	0.1269 (0.38)	-0.0385 (-1.56)	0.1358*** (2.64)	-0.0216 (-0.41)	0.0361
CI-spread 2 (t-value)	Positive	-	0.7464 (1.62)	0.0414 (1.22)	0.1542** (2.17)	0.1928*** (2.65)	0.0680
	Negative	-	0.2945 (0.51)	-0.0111 (-0.26)	0.0888 (0.99)	-0.2149** (-2.34)	0.0211

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

B. Year 2

Capital Investment	Change value on the ratio of output to its trend value	Regression Coefficients				
		β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	Positive	-0.8936*	0.8875***	0.2993***	0.2510***	0.7945
	Negative	-0.2099	0.8881***	0.3122***	0.0996	0.8501
2 nd	Positive	0.5740	0.8523***	0.3545***	0.5343***	0.6130
	Negative	-0.4163	0.8633***	0.2348***	0.2877***	0.8457
3 rd	Positive	0.5311	0.9071***	0.0403	0.4159***	0.8344
	Negative	0.2117	0.8988***	0.0805	0.3389***	0.8583
4 th	Positive	0.2423	0.9314***	0.1109	0.3490***	0.7996
	Negative	-0.0231	0.8739***	0.0670	0.0972	0.8266
Highest	Positive	0.2189	0.8995***	0.1957***	0.2919***	0.8112
	Negative	-0.2416	0.8714***	0.4236***	0.3211***	0.8760
CI-spread 1 (t-value)	Positive	-0.3904 (-0.83)	-0.0456 (-1.12)	0.1736** (2.41)	0.0722 (0.89)	0.0318
	Negative	-0.1808 (-0.58)	0.0030 (0.11)	0.0282 (0.59)	-0.0155 (-0.29)	-0.0181
CI-spread 2 (t-value)	Positive	-1.1125* (-1.83)	-0.0120 (-0.23)	0.1036 (1.11)	-0.0408 (-0.39)	-0.0119
	Negative	0.0316 (0.08)	0.0166 (0.47)	-0.1115* (-1.76)	-0.2216*** (-3.11)	0.0713

C. Year 3

Capital Investment	Change value on the ratio of output to its trend value	Regression Coefficients				
		β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	Positive	-0.2507	0.9040***	0.1423**	0.2488***	0.8087
	Negative	-0.6244	0.9287***	0.3421***	0.1675**	0.8312
2 nd	Positive	-0.2833	0.9161***	0.5534***	0.3516***	0.7789
	Negative	0.2355	0.8803***	0.2090***	0.4378***	0.8496
3 rd	Positive	0.3806	0.8174***	0.0764	0.1947***	0.7857
	Negative	0.0455	0.9310***	0.0427	0.5207***	0.8759
4 th	Positive	0.7816	0.8818***	0.2115***	0.2321**	0.7418
	Negative	-0.0209	0.8842***	0.1061**	0.0918	0.8526
Highest	Positive	0.2988	1.0058***	0.3823***	0.2984**	0.7133
	Negative	-0.4880	0.9039***	0.3505***	0.2948***	0.8658
CI-spread 1 (t-value)	Positive	-0.8073* (-1.85)	-0.0337 (-0.83)	0.0510 (0.78)	0.0349 (0.44)	-0.0116
	Negative	0.0600 (0.20)	0.0105 (0.38)	0.0472 (1.06)	0.1094** (2.01)	0.0163
CI-spread 2 (t-value)	Positive	-0.5496 (-0.74)	-0.1018 (-1.48)	-0.2400** (-2.15)	-0.0496 (-0.37)	0.0329
	Negative	-0.1364 (-0.31)	0.0248 (0.61)	-0.0084 (-0.13)	-0.1273 (-1.60)	0.0024

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

D. Year 4

Capital Investment	Change value on the ratio of output to its trend value	Regression Coefficients				
		β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	Positive	-0.4688	0.8433***	0.2615***	0.4405***	0.7649
	Negative	-0.3446	0.9555***	0.2734***	0.2507***	0.8125
2 nd	Positive	0.7604	1.1459***	1.2461***	-0.0489	0.6965
	Negative	0.1305	0.8671***	0.1474**	0.3095***	0.8263
3 rd	Positive	0.7416	0.9759***	-0.0934	0.4148***	0.8093
	Negative	0.1837	0.8291***	0.0148	0.3905***	0.7956
4 th	Positive	0.3706	0.9329***	0.2438***	0.0091	0.8471
	Negative	0.1055	0.8865***	0.0027	0.2019***	0.8176
Highest	Positive	0.5164	1.0507***	0.4543***	-0.1644	0.7891
	Negative	-0.2141	0.8788***	0.3075***	0.4080***	0.8637
CI-spread 1 (t-value)	Positive	-0.2977 (-0.60)	0.0028 (0.06)	0.4048*** (4.91)	0.2735*** (3.01)	0.1948
	Negative	-0.0528 (-0.17)	0.0286 (0.92)	0.0553 (1.04)	-0.0249 (-0.43)	-0.0042
CI-spread 2 (t-value)	Positive	-0.9853 (-1.37)	-0.2075*** (-2.98)	-0.1928 (-1.62)	0.6050*** (4.61)	0.2375
	Negative	-0.1305 (-0.27)	0.0766 (1.62)	-0.0341 (-0.42)	-0.1573* (-1.76)	0.0311

E. Year 5

Capital Investment	Change value on the ratio of output to its trend value	Regression Coefficients				
		β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	Positive	-0.6982	0.9469***	0.5254***	0.3718***	0.7783
	Negative	-0.4231	0.9070***	0.2321***	0.1707**	0.7833
2 nd	Positive	-0.0156	0.9329***	0.3729***	-0.2195*	0.6535
	Negative	0.2923	0.8577***	-0.0243	0.0461	0.7569
3 rd	Positive	-0.9936**	0.8660***	-0.2209***	0.4085***	0.8130
	Negative	-0.0832	0.9218***	-0.2393***	0.3087***	0.8318
4 th	Positive	-0.0769	0.9421***	0.3460***	-0.0643	0.8514
	Negative	0.6194	0.9430***	-0.0892	0.0860	0.7946
Highest	Positive	0.2092	0.9732***	0.1203	-0.0304	0.7855
	Negative	-0.0496	0.9210***	0.2566***	0.2325**	0.7666
CI-spread 1 (t-value)	Positive	-0.4231 (-1.06)	-0.0177 (-0.38)	0.2160** (2.57)	0.1235 (1.49)	0.0773
	Negative	-0.3503 (-0.95)	-0.0497 (-1.17)	0.0201 (0.26)	-0.0508 (-0.67)	-0.0093
CI-spread 2 (t-value)	Positive	-0.9074* (-1.67)	-0.0263 (-0.42)	0.4051*** (3.55)	0.4022*** (3.57)	0.2222
	Negative	-0.3735 (-0.67)	-0.0140 (-0.22)	-0.0245 (-0.21)	-0.0618 (-0.54)	-0.0249

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

Table toq-1 Descriptive statistics for the 9 SZ-BM portfolios (1987/7 to 2000/6)

a. number of firms

- Tobin's $q > 1$

		Book-to-market equity		
		Low	Medium	High
Size	Small	17	19	21
	Medium	19	20	20
	Large	25	21	15

- Tobin's $q \leq 1$

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.22	0.33	3
	Medium	0.11	0	2
	Large	0.11	0	1

b. value-weighted Scholes-Williams beta

- Tobin's $q > 1$

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.8175	0.7490	0.7908
	Medium	0.9069	0.8411	0.7921
	Large	0.9154	0.8502	0.8103

- Tobin's $q \leq 1$

		Book-to-market equity		
		Low	Medium	High
Size	Small	1.4566	0.6662	0.7296
	Medium	0.7485	-	0.7736
	Large	0.6584	-	0.9733

c. value-weighted size

- Tobin's $q > 1$

		Book-to-market equity		
		Low	Medium	High
Size	Small	3,294	3,399	3,453
	Medium	7,797	7,614	7,427
	Large	80,572	46,170	47,279

Unit: one million NT dollar

- Tobin's $q \leq 1$

		Book-to-market equity		
		Low	Medium	High
Size	Small	559	1,582	3,012
	Medium	4,315	-	6,112
	Large	16,761	-	15,010

Unit: one million NT dollar

d. value-weighted book-to-market equity

- Tobin's $q > 1$

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.2800	0.4429	0.6561
	Medium	0.2843	0.4281	0.6475
	Large	0.2649	0.4366	0.6375

- Tobin's $q \leq 1$

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.2286	0.5198	1.0558
	Medium	0.4351	-	0.9692
	Large	0.4382	-	0.8272

- e. value-weighted capital investment increasing (decreasing) rate (scaled by total assets)

- Tobin's $q > 1$

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.3670	2.5165	0.7831
	Medium	0.9748	2.9518	0.8500
	Large	6.8222	0.6750	0.8306

- Tobin's $q \leq 1$

		Book-to-market equity		
		Low	Medium	High
Size	Small	-44.7376	10.1679	2.0917
	Medium	9.6231	-	-0.0858
	Large	-0.3841	-	0.3944

- f. monthly value-weighted excess return

- Tobin's $q > 1$

		Book-to-market equity		
		Low	Medium	High
Size	Small	2.0962	1.9107	1.7892
	Medium	1.5583	1.2009	1.4796
	Large	1.2029	1.1501	0.9375

Unit: %

- Tobin's $q \leq 1$

		Book-to-market equity		
		Low	Medium	High
Size	Small	9.7190	4.0654	3.6958
	Medium	5.1176	-	4.6206
	Large	-3.7169	-	4.0800

Unit: %

- g. standard deviation of excess return

- Tobin's $q > 1$

		Book-to-market equity		
		Low	Medium	High
Size	Small	15.55	15.86	15.67
	Medium	14.84	13.49	15.85
	Large	12.83	12.58	13.05

Unit: %

- Tobin's $q \leq 1$

		Book-to-market equity		
		Low	Medium	High
Size	Small	24.34	23.18	23.77
	Medium	27.42	-	19.03
	Large	10.00	-	21.61

Unit: %

A Regression based on Individual Stocks

	Tobin's q	Intercept	Beta	Size	Book-to-market t	Capital Investment Increasing (decreasing) Rate scaled by Total Assets
(a)	> 1	1.8489 (1.01)	-1.0452 (-0.55)			
	≤ 1	-25.8936 (-1.25)	25.5275 (1.32)			
(b)	> 1	7.7716 (1.50)		-0.3964 (-1.36)		
	≤ 1	22.5692 (1.57)		-1.2233 (-1.36)		
(c)	> 1	1.1410 (0.97)			-0.2822 (-0.61)	
	≤ 1	3.6917 (1.32)			1.6992 (0.61)	
(g)	> 1	1.5446 (1.41)				-0.0009 (-0.04)
	≤ 1	3.5982 (1.37)				-1.0703 (-0.96)
(h)	> 1	7.5626 (1.58)	-0.5194 (-0.43)	-0.3666 (-1.35)		
	≤ 1	7.0741 (0.26)	26.4971 (0.76)	-1.9041 (-1.35)		
(i)	> 1	2.3012 (1.17)	-1.9141 (-1.02)		-0.1600 (-0.38)	
	≤ 1	-15.0152 (-0.78)	17.6029 (0.97)		2.4409 (0.85)	
(m)	> 1	1.8088 (0.98)	-0.9799 (-0.51)			-0.0014 (-0.06)
	≤ 1	-13.7603 (-0.93)	15.8684 (1.12)			-0.9711 (-0.69)
(n)	> 1	7.1715 (1.48)		-0.3767 (-1.38)	-0.2601 (-0.65)	
	≤ 1	27.8164 (1.23)		-1.5474 (-1.08)	0.9061 (0.31)	
(r)	> 1	7.7952 (1.49)		-0.3965 (-1.35)		-0.0005 (-0.02)
	≤ 1	33.2548** (2.05)		-1.9035* (-1.90)		-1.0810 (-0.98)
(v)	> 1	1.1419 (0.97)			-0.3005 (-0.66)	-0.0007 (-0.03)
	≤ 1	3.3961 (1.16)			1.9155 (0.63)	-0.9720 (-0.86)
(w)	> 1	7.2834 (1.57)	-0.9944 (-0.90)	-0.3493 (-1.32)	-0.3458 (-0.87)	
	≤ 1	33.1498 (0.89)	16.3829 (0.50)	-2.7605 (-1.15)	1.4193 (0.39)	
(aa)	> 1	7.5706 (1.55)	-0.4827 (-0.39)	-0.3677 (-1.34)		-0.0010 (-0.04)
	≤ 1	23.6707 (0.79)	25.3425 (0.72)	-2.8134 (-1.76)		-1.0690 (-0.77)
(ae)	> 1	2.2839 (1.16)	-1.8873 (-1.00)		-0.1713 (-0.41)	-0.0009 (-0.04)
	≤ 1	21.7730 (1.12)	-15.3587 (-0.83)		0.1695 (0.05)	-1.1151 (-0.78)
(ai)	> 1	7.0298 (1.44)		-0.3674 (-1.33)	-0.2758 (-0.70)	0.0002 (0.01)
	≤ 1	47.4898* (1.90)		-2.8396* (-1.78)	-3.0884 (-0.96)	-1.2427 (-1.07)
(am)	> 1	6.9852 (1.48)	-0.9253 (-0.83)	-0.3341 (-1.24)	-0.3582 (-0.91)	0.0002 (0.01)
	≤ 1	61.0514 (1.49)	-3.8476 (-0.11)	-3.1494 (-1.30)	-1.8676 (-0.49)	-1.0557 (-0.72)

Table toq-4 Yearly Returns on the Characteristic-Adjusted Capital Investment and CI-Spread Portfolio at Year 1, 2, 3, 4, and 5 formed on the Tobin's q and Capital Investment: 1987 to 1999
(Capital Investment is scaled by Total Assets and defined as increasing (decreasing) rate of capital expenditure)

CI Portfolio	Tobin's q	Average Number of Firms	Returns in Year 1		Returns in Year 2		Returns in Year 3		Returns in Year 4		Returns in Year 5	
			Mean Return (t-statistics)	Probability of Positive Returns	Mean Return (t-statistics)	Probability of Positive Returns	Mean Return (t-statistics)	Probability of Positive Returns	Mean Return (t-statistics)	Probability of Positive Returns	Mean Return (t-statistics)	Probability of Positive Returns
lowest	> 1	35	0.8423 (0.23)	0.5385	-5.8421 (-1.79)	0.5000	-3.1471 (-1.17)	0.3636	-4.0410 (-1.71)	0.3000	-9.3370** (-2.43)	0.3333
	≤ 1	0.6	13.7466 (0.72)	0.6667	45.6486 (1.54)	0.6667	7.2827 (0.31)	0.6667	-7.6224 (-0.63)	0.6667	-0.6880 (-0.02)	0.3333
2 nd	> 1	36	-0.0119 (-0.01)	0.5385	-3.5361 (-1.75)	0.3333	-0.9879 (-0.40)	0.5455	-1.1336 (-0.40)	0.5000	-1.2549 (-0.77)	0.4444
	≤ 1	1	19.7627** (2.52)	0.7143	1.1030 (0.06)	0.6667	4.9624 (1.16)	0.8000	-17.5681 (-1.79)	0.2500	-8.5958 (-1.04)	0.2500
3 rd	> 1	36	1.3522 (0.54)	0.4615	0.9366 (0.37)	0.6667	2.5607 (1.48)	0.5455	1.6628 (0.69)	0.6000	-1.1450 (-0.42)	0.4444
	≤ 1	0.8	9.7813 (0.37)	0.5000	27.3643* (3.42)	1.0000	34.4657 (2.07)	1.0000	5.9360 (0.22)	0.5000	-7.5485 (-2.84)	0
4 th	> 1	36	1.9873 (1.21)	0.4615	0.9955 (0.42)	0.5000	3.3885 (1.01)	0.6364	-0.7816 (-0.49)	0.4000	1.4101 (0.90)	0.7778
	≤ 1	0.3	1.3730 (0.09)	0.5000	35.9713 (1.61)	1.0000	2.2926 (1.00)	0.5000	22.9932	1.0000	24.5816	1.0000
highest	> 1	36	-3.5610* (-1.81)	0.1538	3.0279 (1.07)	0.5000	-0.6775 (-0.30)	0.4545	-0.8515 (-0.27)	0.5000	-0.1826 (-0.04)	0.3333
	≤ 1	1.5	-9.6703 (-0.48)	0.4000	-4.5803 (-1.83)	0.2000	3.1901 (0.28)	0.7500	4.8027 (0.75)	0.6667	-0.0711 (-0.04)	0.6667
CI-Spread 1	> 1	-	1.2020 (0.73)	0.5385	-6.7008 (-1.70)	0.4167	-3.4230 (-1.06)	0.2727	-1.7708 (-0.58)	0.5000	-5.9097 (-1.63)	0.4444
	≤ 1	-	7.7959	1.0000	61.7590	1.0000	19.8272	1.0000	-11.6786	0	-11.3318	0
CI-Spread 2	> 1	-	4.4033 (1.21)	0.6923	-8.8700 (-1.68)	0.3333	-2.4696 (-0.89)	0.4545	-3.1895 (-0.94)	0.5000	-9.1543 (-1.36)	0.4444
	≤ 1	-	37.4130 (0.85)	0.5000	26.5968 (0.64)	0.5000	-6.1700 (-0.15)	0.5000	-6.7962*** (-69.42)	0	-32.0636 (-1.53)	0

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table toq-42 Regression Results for the Capital Investment (CI) Portfolio Returns formed on Tobin's q and Capital Investment on the Three Factors: July 1987 to June 2000

A. Year 1

Capital Investment	Tobin's q	Average Number of Firms	Regression Coefficients				
			β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	>1	35	-0.0217	0.9199***	0.3741***	0.1968**	0.8225
	≤1	0.6	1.2054	0.7526***	1.0705***	1.3741***	0.8360
2 nd	>1	36	0.1586	0.8409***	0.1368***	0.3214***	0.8969
	≤1	1	1.1376	0.9942***	1.2144***	0.9946***	0.7244
3 rd	>1	36	0.1834	0.8955***	-0.0733	0.1887***	0.9070
	≤1	0.8	1.3320	0.6592***	0.5559	1.3699***	0.6066
4 th	>1	36	0.1501	0.8762***	0.0180	0.1471***	0.8834
	≤1	0.3	-0.3728	1.0452***	0.1785	1.9516***	0.8544
Highest	>1	36	-0.5369*	0.9314***	0.2005***	0.2326***	0.9215
	≤1	1.5	-1.3821	0.8890***	0.6546***	1.0800***	0.7835
CI-spread 1 (t-value)	>1	-	0.2618 (0.99)	-0.0234 (-1.19)	0.1462*** (3.56)	0.0692 (1.65)	0.0803
	≤1	-	-0.2316 (-0.10)	-0.0755 (-0.86)	0.4679 (0.79)	-0.3676 (-1.71)	0.3157
CI-spread 2 (t-value)	>1	-	0.5152 (1.07)	-0.0115 (-0.32)	0.1736** (2.33)	-0.0358 (-0.47)	0.0164
	≤1	-	4.6113* (1.88)	-0.0823 (-0.65)	1.3538 (1.70)	0.7145** (2.26)	0.1331

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

B. Year 2

Capital Investment	Tobin's q	Average Number of Firms	Regression Coefficients				
			β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	>1	35	-0.6124**	0.8722***	0.3178***	0.1293***	0.9086
	≤1	0.6	3.4999*	1.2670***	0.4604	0.5649	0.7153
2 nd	>1	36	-0.2978	0.8530***	0.2256***	0.2570***	0.8819
	≤1	1	0.0003	0.9794***	0.7859***	0.0974	0.4532
3 rd	>1	36	0.2422	0.8849***	-0.0275	0.2354***	0.9057
	≤1	0.8	0.6865	0.8220***	0.5242	1.4360***	0.5906
4 th	>1	36	0.1928	0.9181***	-0.0404	0.0915	0.8614
	≤1	0.3	-0.6658	1.0322***	-0.1936	1.3305***	0.7928
Highest	>1	36	0.1022	0.8908***	0.2606***	0.2416***	0.8809
	≤1	1.5	-0.7977	0.9892***	0.3844**	0.7585***	0.7577
CI-spread 1 (t-value)	>1	-	-0.6026** (-2.54)	-0.0418** (-2.05)	0.1616*** (4.45)	0.0266 (0.65)	0.1227
	≤1	-	4.6395* (1.85)	0.0117 (0.09)	-0.2635 (-0.39)	0.7559 (1.63)	0.1234
CI-spread 2 (t-value)	>1	-	-0.7146** (-2.27)	-0.0186 (-0.68)	0.0572 (1.19)	-0.1122** (-2.06)	0.0167
	≤1	-	1.1564 (0.52)	0.0429 (0.28)	-0.1472 (-0.27)	1.0168* (1.94)	0.1495

C. Year 3

Capital Investment	Tobin's q	Average Number of Firms	Regression Coefficients				
			β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	>1	35	-0.4483	0.9149***	0.2237***	0.1753***	0.8684
	≤1	0.6	1.3490	1.0823***	1.1173***	-0.5086	0.6310
2 nd	>1	36	0.1101	0.8880***	0.2029***	0.3121***	0.8904
	≤1	1	0.0026	0.9294***	0.2028	0.2732	0.4711
3 rd	>1	36	0.3401	0.8741***	-0.0001	0.2860***	0.8748
	≤1	0.8	3.4782*	1.1559***	-0.0491	1.1938***	0.7533
4 th	>1	36	0.5703*	0.8817***	0.0008	0.0962	0.8602
	≤1	0.3	0.5190	1.0113***	1.2458***	0.1318	0.8216
Highest	>1	36	-0.1357	0.9741***	0.1151**	0.2044***	0.8651
	≤1	1.5	0.2753	0.9649***	0.6229***	0.9672***	0.8386
CI-spread 1 (t-value)	>1	-	-0.3864 (-1.38)	-0.0264 (-1.02)	0.1553*** (3.70)	0.0934* (1.83)	0.1023
	≤1	-	3.2903 (1.74)	0.1132 (0.88)	-0.1898 (-1.12)	-0.8528** (-2.46)	0.3809
CI-spread 2 (t-value)	>1	-	-0.3126 (-0.73)	-0.0592 (-1.48)	0.1086* (1.67)	-0.0291 (-0.37)	0.0121
	≤1	-	-0.6520 (-0.40)	0.0709 (0.48)	0.6703*** (3.34)	-1.0596 (-2.88)	0.3777

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

D. Year 4

Capital Investment	Tobin's q	Average Number of Firms	Regression Coefficients				
			β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	>1	35	-0.2813	0.9299***	0.1677***	0.3313***	0.8693
	≤1	0.6	-0.9845	1.0977***	1.1640***	-0.3871*	0.9003
2 nd	>1	36	0.0590	0.8645***	0.1588***	0.3452***	0.8542
	≤1	1	-2.0306**	0.9160***	0.7668***	0.4005**	0.7428
3 rd	>1	36	0.3844	0.8424***	-0.1167*	0.3396***	0.8272
	≤1	0.8	2.2655*	1.2188***	0.0766	1.0730***	0.9098
4 th	>1	36	0.1663	0.8926***	-0.0622	0.1338**	0.8928
	≤1	0.3	0.7203	0.7583***	1.1078**	0.8493**	0.8532
Highest	>1	36	-0.0178	0.8857***	0.0743	0.1451**	0.8626
	≤1	1.5	0.4224	0.8984***	0.5098***	0.2470*	0.9052
CI-spread 1 (t-value)	>1	-	-0.1854 (-0.76)	0.0080 (0.34)	0.1572*** (3.90)	0.1988*** (4.48)	0.2048
	≤1	-	-1.9110 (-0.68)	0.1724 (0.94)	0.2336 (0.65)	-0.2773 (-0.87)	0.3031
CI-spread 2 (t-value)	>1	-	-0.2636 (-0.70)	0.0442 (1.22)	0.0934 (1.51)	0.1862*** (2.72)	0.0564
	≤1	-	-1.8540 (-1.02)	0.2120 (1.67)	0.8235*** (3.82)	-0.3203 (-1.21)	0.6005

E. Year 5

Capital Investment	Tobin's q	Average Number of Firms	Regression Coefficients				
			β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	>1	35	-0.5917**	0.8865***	0.3278***	0.2087***	0.8622
	≤1	0.6	1.6753	1.2641***	0.8029*	0.4908	0.4131
2 nd	>1	36	-0.0358	0.8668***	0.1124	0.0327	0.8081
	≤1	1	-0.3016	0.6715***	0.3190	0.0798	0.2139
3 rd	>1	36	-0.3289	0.8670***	-0.2817***	0.3081***	0.8619
	≤1	0.8	0.8406	1.5446***	-0.4038	0.7703**	0.8206
4 th	>1	36	0.2945	0.9155***	0.0949	0.0283	0.8895
	≤1	0.3	3.9492*	1.0589***	0.3472	0.7817*	0.6165
Highest	>1	36	0.0937	0.9248***	0.0898	0.0831	0.8202
	≤1	1.5	0.2390	0.9442***	0.9855***	0.3985***	0.8734
CI-spread 1 (t-value)	>1	-	-0.5079* (-1.88)	-0.0435 (-1.40)	0.1278** (2.26)	0.0650 (1.16)	0.0804
	≤1	-	-2.3015 (-1.32)	-0.1008 (-0.41)	0.5003 (0.91)	-0.5659 (-1.60)	0.3107
CI-spread 2 (t-value)	>1	-	-0.6855* (-1.87)	-0.0383 (-0.91)	0.2380*** (3.10)	0.1256 (1.66)	0.1254
	≤1	-	1.2157 (0.64)	0.2614 (1.14)	0.7209* (1.84)	0.3715 (1.17)	0.1004

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

Table toqc-1 Descriptive statistics for the 9 SZ-BM portfolios (1987/7 to 2000/6)

a. number of firms

- Δ Tobin's $q > 0$

		Book-to-market equity		
		Low	Medium	High
Size	Small	8	8	8
	Medium	8	9	9
	Large	14	11	8

- Δ Tobin's $q \leq 0$

		Book-to-market equity		
		Low	Medium	High
Size	Small	5	8	12
	Medium	8	8	10
	Large	9	9	7

b. value-weighted Scholes-Williams beta

- Δ Tobin's $q > 0$

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.8496	0.6736	0.6419
	Medium	0.8425	0.7945	0.8138
	Large	0.9247	0.8119	0.7215

- Δ Tobin's $q \leq 0$

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.8241	0.7076	0.7155
	Medium	0.9043	0.8754	0.7774
	Large	0.9199	0.8741	0.7821

c. value-weighted size

- Δ Tobin's $q > 0$

		Book-to-market equity		
		Low	Medium	High
Size	Small	3,291	3,181	3,120
	Medium	7,607	7,527	7,471
	Large	70,446	39,003	41,678

Unit: one million NT dollar

- Δ Tobin's $q \leq 0$

		Book-to-market equity		
		Low	Medium	High
Size	Small	3,152	3,210	3,429
	Medium	7,429	6,969	7,111
	Large	80,023	47,021	50,965

Unit: one million NT dollar

d. value-weighted book-to-market equity

- Δ Tobin's $q > 0$

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.2460	0.4565	0.6692
	Medium	0.2732	0.4261	0.6649
	Large	0.2850	0.4423	0.6322

- $\Delta \text{Tobin's } q \leq 0$

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.3164	0.4366	0.7353
	Medium	0.3038	0.4612	0.6776
	Large	0.2995	0.4861	0.6990

- e. value-weighted capital investment increasing (decreasing) rate (scaled by total assets)

- $\Delta \text{Tobin's } q > 0$

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.7908	6.5727	1.5758
	Medium	0.5417	0.3149	1.4490
	Large	2.5032	0.5199	1.9123

- $\Delta \text{Tobin's } q \leq 0$

		Book-to-market equity		
		Low	Medium	High
Size	Small	-0.7281	0.6608	-0.0093
	Medium	1.2148	3.4402	0.1316
	Large	30.4939	1.0145	0.7320

- f. monthly value-weighted risk premium

- $\Delta \text{Tobin's } q > 0$

		Book-to-market equity		
		Low	Medium	High
Size	Small	2.2098	1.9332	3.0100
	Medium	1.6043	1.9852	2.9460
	Large	1.5850	1.5180	1.4419

Unit: %

- $\Delta \text{Tobin's } q \leq 0$

		Book-to-market equity		
		Low	Medium	High
Size	Small	0.0508	1.5524	1.8257
	Medium	0.8873	2.3357	1.9427
	Large	1.9408	1.1826	0.6224

Unit: %

- g. standard deviation of risk premium

- $\Delta \text{Tobin's } q > 0$

		Book-to-market equity		
		Low	Medium	High
Size	Small	16.31	16.58	17.96
	Medium	15.67	15.21	22.14
	Large	12.84	13.40	13.82

Unit: %

- $\Delta \text{Tobin's } q \leq 0$

		Book-to-market equity		
		Low	Medium	High
Size	Small	12.08	16.93	16.76
	Medium	14.53	14.65	17.78
	Large	14.58	12.22	13.31

Unit: %

A Regression based on Individual Stocks

	Δ Tobin's q	Intercept	Beta	Size	Book-to-mark et	Capital Investment Increasing (decreasing) Rate scaled by Total Assets
(a)	> 0	2.9534 (1.11)	-2.0190 (-0.69)			
	≤ 0	2.9625 (0.95)	-1.4451 (-0.43)			
(b)	> 0	12.8364* (1.96)		-0.6807* (-1.85)		
	≤ 0	9.1983 (1.64)		-0.4763 (-1.47)		
(c)	> 0	2.5774* (1.76)			0.7586 (1.04)	
	≤ 0	0.7469 (0.41)			-0.5772 (-0.60)	
(g)	> 0	2.1475* (1.71)				0.0015 (0.03)
	≤ 0	1.8336 (1.54)				-0.9410** (-2.22)
(h)	> 0	7.6482 (1.14)	-2.2820 (-1.25)	-0.2723 (-0.69)		
	≤ 0	10.0161 (1.52)	-1.4997 (-0.41)	-0.4627 (-1.38)		
(i)	> 0	2.7584 (1.06)	-2.7435 (-1.03)		-0.5333 (-0.47)	
	≤ 0	5.4732* (1.65)	-8.6853** (-2.09)		-2.4243** (-2.10)	
(m)	> 0	3.1590 (1.19)	-2.3671 (-0.80)			0.0111 (0.25)
	≤ 0	2.2673 (0.74)	-0.7460 (-0.22)			-0.8993** (-2.10)
(n)	> 0	10.9730* (1.77)		-0.5515 (-1.55)	0.3237 (0.46)	
	≤ 0	12.6075 (1.60)		-0.6285* (-1.67)	0.5303 (0.39)	
(r)	> 0	13.2883** (2.02)		-0.7110* (-1.92)		0.0104 (0.21)
	≤ 0	10.5635* (1.72)		-0.5539 (-1.53)		-0.1981 (-0.40)
(v)	> 0	2.5510* (1.75)			0.7370 (1.01)	0.0105 (0.24)
	≤ 0	0.8459 (0.46)			-0.6599 (-0.67)	-0.8018* (-1.88)
(w)	> 0	4.8434 (0.66)	-2.6871 (-1.24)	-0.1353 (-0.32)	-0.7119 (-0.51)	
	≤ 0	11.4885 (1.45)	-4.2652 (-1.09)	-0.4319 (-1.15)	-0.7162 (-0.47)	
(aa)	> 0	8.2842 (1.23)	-2.6035 (-1.40)	-0.2982 (-0.76)		0.0087 (0.17)
	≤ 0	11.3458 (1.57)	-1.2647 (-0.34)	-0.5494 (-1.49)		-0.1319 (-0.26)
(ae)	> 0	2.9214 (1.12)	-3.1710 (-1.18)		-0.6187 (-0.55)	0.0150 (0.33)
	≤ 0	4.7576 (1.47)	-7.3545* (-1.83)		-2.2546* (-1.95)	-0.7062* (-1.70)
(ai)	> 0	11.4780* (1.85)		-0.5841 (-1.64)	0.3486 (0.49)	0.0149 (0.31)
	≤ 0	14.7954 (1.29)		-0.7412 (-1.35)	0.6539 (0.38)	0.0561 (0.08)
(am)	> 0	5.3915 (0.73)	-3.0253 (-1.38)	-0.1570 (-0.37)	-0.7390 (-0.53)	0.0125 (0.25)
	≤ 0	10.3486 (0.92)	-4.3642 (-1.17)	-0.3463 (-0.65)	-0.8317 (-0.43)	-0.0136 (-0.02)

Table toqc-4 Yearly Returns on the Characteristic-Adjusted Capital Investment and CI-Spread Portfolio at Year 1, 2, 3, 4, and 5 formed on the Change Value on Tobin's q and Capital Investment: 1987 to 1999

(Capital Investment is scaled by Total Assets and defined as increasing (decreasing) rate of capital expenditure)

CI Portfolio	Change Value on Tobin's q	Average Number of Firms	Returns in Year 1		Returns in Year 2		Returns in Year 3		Returns in Year 4		Returns in Year 5	
			Mean Return (t-statistics)	Probability of Positive Returns	Mean Return (t-statistics)	Probability of Positive Returns	Mean Return (t-statistics)	Probability of Positive Returns	Mean Return (t-statistics)	Probability of Positive Returns	Mean Return (t-statistics)	Probability of Positive Returns
lowest	> 0	16	3.2890 (0.49)	0.5833	-6.6412 (-1.38)	0.4545	-4.2204 (-0.83)	0.4000	-5.0595 (-1.33)	0.3000	2.6199 (0.38)	0.5556
	≤ 0	16	0.1259 (0.0)	0.5385	6.2823 (0.99)	0.5833	-3.5492 (-0.65)	0.2727	-4.7217 (-0.96)	0.5000	-6.3505 (-1.43)	0.2222
2 nd	> 0	16	2.1148 (0.55)	0.4545	-7.1421** (-2.53)	0.2000	-0.2165 (-0.06)	0.6667	-4.1680 (-1.23)	0.5000	-3.1818 (-1.12)	0.4286
	≤ 0	16	3.6372 (0.57)	0.6154	4.9853 (0.91)	0.5000	-5.7327 (-0.57)	0.1818	15.9875 (1.82)	0.5000	3.9068 (0.64)	0.6667
3 rd	> 0	16	0.6007 (0.16)	0.5000	-1.4155 (-0.42)	0.5000	5.5668* (1.94)	0.8000	-3.7006 (-0.88)	0.2222	-0.2863 (-0.07)	0.5714
	≤ 0	15	-2.7708 (-0.38)	0.4167	16.3692** (2.24)	0.8182	8.8049 (0.78)	0.5000	-0.3085 (-0.03)	0.3333	-11.3930 (-1.55)	0.3750
4 th	> 0	18	-0.4313 (-0.10)	0.4545	-3.2360 (-1.01)	0.4000	7.0418 (1.30)	0.7500	1.4950 (0.48)	0.5556	-0.5967 (-0.26)	0.7143
	≤ 0	14	0.2191 (0.09)	0.3000	3.7363 (1.26)	0.6667	-1.4022 (-0.53)	0.5000	-6.2180** (-2.44)	0.2857	1.9072 (0.41)	0.6667
highest	> 0	17	-2.3957 (-0.65)	0.3333	-0.0229 (-0.01)	0.4545	-1.8471 (-0.46)	0.4444	1.1289 (0.25)	0.6250	4.4528 (0.96)	0.3750
	≤ 0	14	-5.7078 (-1.10)	0.4545	4.1417 (0.92)	0.6000	-16.8194 (-1.33)	0.2222	0.2990 (0.11)	0.5714	-11.1808** (-3.02)	0.1667
CI-Spread 1	> 0	-	1.3886 (0.37)	0.4000	-4.1615 (-1.01)	0.4444	-2.3390 (-0.55)	0.5000	-6.5155 (-1.56)	0.3750	-8.6946** (-2.55)	0.1429
	≤ 0	-	5.2800 (1.73)	0.7000	1.3250 (0.20)	0.6667	-8.0629 (-1.85)	0.2500	2.8043 (0.51)	0.5714	7.2135 (1.74)	0.6667
CI-Spread 2	> 0	-	1.9275 (0.24)	0.6364	-4.6008 (-0.91)	0.4000	-3.1853 (-0.57)	0.6667	-3.9945 (-0.76)	0.5556	-7.7454 (-0.98)	0.5000
	≤ 0	-	3.5036 (0.62)	0.6364	-0.2405 (-0.03)	0.4000	13.2582 (0.76)	0.4444	-5.7626 (-0.85)	0.5000	6.6713 (0.94)	0.6667

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level.

Table toqc-42 Regression Results for the Capital Investment (CI) Portfolio's Returns formed on the Change Value on Tobin's q and Capital Investment on the Three Factors: July 1987 to June 2000

A. Year 1

Capital Investment	Change Value on Tobin's q	Average Number of Firms	Regression Coefficients				
			β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	>0	16	0.1049	0.9159***	0.3621***	0.2125**	0.7889
	≤0	16	0.4278	0.9653***	0.7127***	0.4930***	0.8211
2 nd	>0	16	0.7479	0.8167***	0.1454**	0.4175***	0.8421
	≤0	16	0.6998	0.8850***	0.4522***	0.3795***	0.6765
3 rd	>0	16	0.0614	0.8937***	0.0436	0.1698***	0.8695
	≤0	15	-0.0586	0.9487***	0.7059***	0.3981***	0.6957
4 th	>0	18	0.0328	0.8782***	0.0907	0.2759***	0.8419
	≤0	14	-0.2233	0.8528***	-0.0570	0.1200	0.8526
Highest	>0	17	-0.3257	0.9102***	0.2051***	0.2396***	0.8617
	≤0	14	-0.7308	0.9913***	0.4852***	0.1855	0.7401
CI-spread 1 (t-value)	>0	-	0.2420 (0.79)	-0.0211 (-0.99)	0.0549 (1.22)	0.1051** (2.35)	0.0383
	≤0	-	1.0714** (2.43)	0.0517 (1.50)	0.4497*** (5.11)	0.0115 (0.15)	0.1840
CI-spread 2 (t-value)	>0	-	0.3014 (0.43)	-0.0344 (-0.69)	0.1655 (1.56)	0.0611 (0.59)	0.0003
	≤0	-	0.9610 (1.35)	-0.0482 (-0.85)	0.2147 (1.49)	0.3235*** (2.66)	0.0651

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

B. Year 2

Capital Investment	Change Value on Tobin's q	Average Number of Firms	Regression Coefficients				
			β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	>0	16	-0.8875*	0.8092***	0.4181***	0.1813**	0.7658
	≤0	16	0.6274	1.0160***	0.5678***	0.3199***	0.7847
2 nd	>0	16	-1.2344**	0.7493***	0.3485***	0.3519***	0.7191
	≤0	16	0.8087	0.9428***	0.6030***	0.2300**	0.7034
3 rd	>0	16	-0.2910	0.8438***	0.0556	0.3265***	0.8064
	≤0	15	1.9095***	1.0481***	0.7451***	0.1777	0.7683
4 th	>0	18	-0.2039	0.9667***	0.1529**	0.3124***	0.8352
	≤0	14	0.4037	0.8528***	-0.1370	-0.0007	0.7619
Highest	>0	17	-0.3777	0.8677***	0.2793***	0.3082***	0.8468
	≤0	14	0.2819	1.1310***	0.5116***	0.0240	0.8123
CI-spread 1 (t-value)	>0	-	-0.4774 (-1.27)	-0.0827*** (-2.62)	0.0369 (0.67)	-0.0723 (-1.18)	0.0418
	≤0	-	0.2025 (0.42)	0.1105** (2.44)	0.5082*** (5.96)	-0.0127 (-0.13)	0.2897
CI-spread 2 (t-value)	>0	-	-0.3600 (-0.73)	0.0108 (0.26)	0.0646 (0.87)	-0.0216 (-0.26)	-0.0166
	≤0	-	0.1193 (0.18)	-0.0814 (-1.37)	0.1607 (1.42)	0.1337 (1.01)	0.0284

C. Year 3

Capital Investment	Change Value on Tobin's q	Average Number of Firms	Regression Coefficients				
			β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	>0	16	-0.4600	0.8796***	0.1657	0.2358*	0.6141
	≤0	16	-0.0965	0.9691***	0.6509***	0.3833***	0.7218
2 nd	>0	16	0.2243	0.9023***	0.1750**	0.5445***	0.8017
	≤0	16	0.1245	0.9524***	0.3558***	0.2352**	0.7487
3 rd	>0	16	0.2081	0.8574***	0.0812	0.3382***	0.7209
	≤0	15	1.0884	1.1163***	0.1776	0.2634*	0.6477
4 th	>0	18	0.4283	0.9000***	0.2675***	0.0950	0.8213
	≤0	14	0.8548	0.8292***	0.0558	0.2591**	0.7356
Highest	>0	17	-0.0852	0.9633***	0.2101***	0.2854***	0.8283
	≤0	14	-1.6825***	0.8895***	0.3132***	0.1957*	0.7060
CI-spread 1 (t-value)	>0	-	-0.3459 (-0.73)	-0.0534 (-1.32)	-0.1276* (-1.93)	0.1066 (1.25)	0.0637
	≤0	-	-0.5864 (-1.07)	0.0770 (1.51)	0.3483*** (4.58)	-0.0924 (-0.94)	0.2037
CI-spread 2 (t-value)	>0	-	-0.2452 (-0.34)	-0.1241* (-1.89)	0.0119 (0.11)	0.0001 (0.001)	0.0073
	≤0	-	1.7238* (1.93)	0.0977 (1.22)	0.3412*** (2.71)	0.1413 (0.88)	0.0633

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square

D. Year 4

Capital Investment	Change Value on Tobin's q	Average Number of Firms	Regression Coefficients				
			β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	>0	16	-0.2409	0.8333***	0.3605***	0.3641***	0.7152
	≤0	16	-0.2551	0.9767***	0.3978***	0.3803***	0.6597
2 nd	>0	16	-0.0036	0.8198***	0.1294*	0.4447***	0.8454
	≤0	16	1.2273	0.9599***	0.5812***	-0.0196	0.5092
3 rd	>0	16	0.2901	0.7764***	0.0669	0.3688***	0.7055
	≤0	15	0.0887	0.9805***	0.1262	0.3054**	0.5991
4 th	>0	18	0.6911	0.8701***	0.2124***	0.0845	0.8036
	≤0	14	-1.5372*	0.8642***	0.0285	0.3209**	0.5200
Highest	>0	17	0.0397	0.9593***	-0.0126	0.2499***	0.7794
	≤0	14	-0.1835	0.9108***	0.2621**	0.1605	0.6050
CI-spread 1 (t-value)	>0	-	-0.5352* (-1.70)	-0.0496* (-1.68)	0.0391 (0.75)	0.2330*** (4.42)	0.1895
	≤0	-	0.8027 (1.01)	0.1054 (1.34)	0.3546*** (2.97)	-0.0781 (-0.57)	0.1131
CI-spread 2 (t-value)	>0	-	0.0275 (0.04)	-0.1454** (-2.13)	0.3258*** (2.80)	0.0725 (0.58)	0.0778
	≤0	-	0.3096 (0.31)	0.1613 (1.61)	0.0848 (0.54)	0.3038* (1.73)	0.0234

E. Year 5

Capital Investment	Change Value on Tobin's q	Average Number of Firms	Regression Coefficients				
			β_0	β_M	β_{SMB}	β_{HML}	\bar{R}^2
Lowest	>0	16	0.3210	0.8898***	0.4966***	0.2653*	0.5259
	≤0	16	-0.2211	1.1070***	0.9871***	0.1657	0.7035
2 nd	>0	16	-0.1807	0.7728***	0.1437	0.1442	0.7261
	≤0	16	0.2130	1.0486***	0.3996***	-0.1089	0.6224
3 rd	>0	16	-0.1802	0.9243***	-0.2411*	0.3576***	0.6838
	≤0	15	-0.8979	0.7252***	0.2548**	0.0599	0.5411
4 th	>0	18	-0.1068	0.9999***	0.4625***	0.0987	0.8128
	≤0	14	0.3650	1.0088***	-0.0802	0.3433**	0.6933
Highest	>0	17	0.1070	0.8785***	0.1106	0.1211	0.6759
	≤0	14	-0.3597	1.1151***	0.6182***	0.3502***	0.8290
CI-spread 1 (t-value)	>0	-	-0.7530*** (-2.64)	-0.1205*** (-3.83)	0.0863 (1.44)	0.2652*** (4.42)	0.3196
	≤0	-	0.5010 (0.81)	0.1673** (2.23)	0.3808*** (3.27)	-0.1170 (-0.95)	0.1449
CI-spread 2 (t-value)	>0	-	-0.2063 (-0.27)	-0.0140 (-0.16)	0.4120** (2.55)	0.2238 (1.44)	0.0769
	≤0	-	0.4862 (0.79)	0.1230 (1.65)	0.2877** (2.49)	-0.0189 (-0.15)	0.0664

* represents significance at 10% level, ** represents significance at 5% level, *** represents significance at 1% level

\bar{R}^2 means adjusted R-square